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THE ARCHITECTURAL RECORD.

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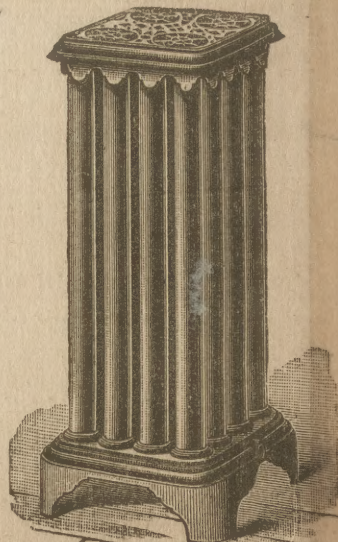
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❖ Suggestions ❖

ON page 45 of this Magazine the series of articles dealing with SUBURBAN RESIDENCES is continued. The purpose of these papers is a practical one, viz., to assist in bringing about a higher order of DESIGN, PLAN AND CONSTRUCTION in the thousands of suburban dwellings erected annually in this country, the immense room for improvement in which is conceded.

The Difficulty is Chiefly with the Owner.

In nine cases out of ten he betakes himself to a BUILDER who more frequently than not is merely our old friend HAYSEED engaged in a mechanical pursuit. He leaves the arrangement of practically everything to him, save perhaps one or two external or internal features of his house upon which he has set his mind. The result is a stereotype dwelling—designed, planned, constructed and equipped in the stereotype manner.

The Builder is rarely an innovator.

He adopts improvements slowly.

To obtain the highest results the owner must inform himself.

Even the architect would rather deal with an instructed client.

If you desire the highest order of house you must INFORM YOURSELF. The series of articles now running in this Magazine will instruct you in the principles and methods which govern good design and substantial construction. In the equipment of your home there are scores of materials and devices every one of which meets a REAL NEED of the householder. In many cases it will not cost you a cent more (and at most only a trifle more) to adopt them, BUT YOU MUST INFORM YOURSELF. In response to requests we have gathered on the following pages a few Suggestions which are worth your attention.

Mantels and Tiles.

IF people who are about to build would take means to inform themselves regarding not only the general design of the prospective structure, but of the detail as well of its interior finish, equipment and decoration, they would secure better and more satisfactory results both in material and artistic beauty. The building of a home is not for a day, but for permanent occupancy. Your house to have beauty, must express refinement and character. You know this. Why, then, allow your builder to persuade you, as he will sometimes try to do, especially if you are building in the country, that the vulgar, ill-designed mantel recommended by him, the cheap product of an uncultivated taste, is the proper thing to set up in your parlor, dining-room or hall? If you will first write, or, better still, come to us, we will gladly show you what perfect taste has done in mantel design and construction. And perfect taste does not necessarily mean extravagant cost. We can suit refined tastes at moderate prices. Then **don't** accept crude work when, for the money you desire to spend, you can obtain the best.

The use of tiles may now, also, be considered indispensable in every well-appointed dwelling. Being made in every style of ornament and shade of color, it is possible to have perfect harmony with the remaining decorations of a room. The beauty in the color of enameled tiles, such as are generally used for mantels or wainscot, is much enhanced by accurate workmanship, but in a much greater degree is a pleasing result obtained by an artistic blending of the different shades of one color, producing clouded effects that are decorative and beautiful.

Our show-rooms are well worth a visit. We have placed on exhibition, also, in the Building Material Exhibition Hall, of the ARCHITECTURAL RECORD, 14 and 16 Vesey Street, a fine exhibit of a tile-set mantel, to which we invite attention.

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SUGGESTIONS.

DECORATIVE GLASS.

THE increasing care everywhere observed in the finish and decoration of the modern suburban dwelling, is an evidence of the refining home influences at work in this country. The desire to make the home attractive—a *satisfaction*—is to be encouraged. And it is not necessary that it should be costly in order to be beautiful. Judgment and good taste, however, are essential in the selection of material, and should be carefully exercised. What single item contributes more to the artistic excellence of a room than the leaded or colored glass of a window, or the crystalline glass, white or tinted, of the door? They secure rich and soft interior effects as nothing else will do. If you desire to embellish your house, much or little, in this manner, we can serve you better perhaps than you imagine, and far cheaper, doubtless, than you have been educated to believe. Our processes are original and productions exquisite; our establishment being the largest of its kind in the world. We have something new in Mural and Japanese decorations that you will be interested in, and we shall be glad to send you our new catalogue of domestic work.

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THE painting of a dwelling is by no means the least important item in its finishing, outside or in. Every owner knows this. It is a common and disappointing experience to have paint quickly fade, crack and scale from the walls, too frequently the result of using the various "ready-mixed" paints, or some one of the many brands of white-lead (so-called), all of them misleading in character, being composed largely of Barytes and other deleterious materials.

There is but one way to secure a lasting and satisfactory job, and that is to use only a well-established brand of *pure* white-lead, *pure* linseed oil and *pure* colors. The cost is no more, and the best is always the cheapest. Here's the true economy of it. Any of the following brands are genuine, and are just as good now as they were when you or your father were boys :

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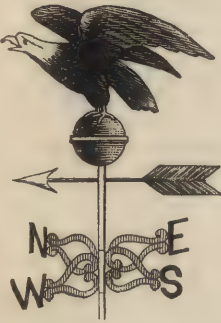
If you are going to build a house in City or Country, first "inform yourself" and you will know where to get the best Dumb-Waiters or Elevators.

My Catalogue covers a wide range of Elevators for hand or power. Send for it.

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MENTION THIS PAPER.



Weather Vanes.

A WEATHER VANE is an essential feature in the proper equipment of the modern suburban dwelling. It not only points the direction of the wind, something we all want to know, and instinctively glance upward for the indication, but imparts a certain undefined *tone* to the homestead place. As children we used to write: "All is not gold that glitters." In this case all *is* gold that glitters, for my copper vanes are gilded with 23-carat gold leaf, a permanent covering, the radiance of which the action of the elements will not dim. Assuming that you will place a vane or tower ornament at some point of elevation about your premises, I advise against the use of iron. While lightness and strength are requisite, iron will rust out, discolor its support, operates with friction, will not turn readily in the wind, and therefore performs unreliable service. I have been manufacturing weather vanes, tower ornaments and finials for over thirty years, and in quality, durability and taste in design and finish they have become the standard goods of their kind. My catalogue, to be had for the asking, furnishes several hundred different designs. Write for it.

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SUGGESTIONS.

MANTELS.

WHAT is the centre-point of a room? the spot upon which the eye fixes itself and around which everything in the room, as it were, groups itself? Obvious answer—the mantel and fireplace. Strange, then, isn't it? that people are so careless of, often so indifferent to, the character, or more correctly, the characterless character of this centre-piece. They pay—for



it is *they* that pay, no matter who does the ordering—\$75, \$100 or \$150 for the parlor mantel in an average suburban house, and nine times out of ten get—what? A crude construction of little, shapeless spindles, shelves and beveled glass thrown together. A thing of no attractiveness, of no artistic merit whatever.

Yet there are in the market designs distinguished by taste and refinement—the work of trained designers, beautifully made. They cost no more than the crude article. Whether you get the one or the other in your house is simply a matter of choice. We can give you artistic mantels costing from \$50 to \$150. Is it not worth your while to call to see us and inspect for yourself what we have to offer, or to send to us for information as a preliminary to action? By making this suggestion we are serving your interest as well as our own.

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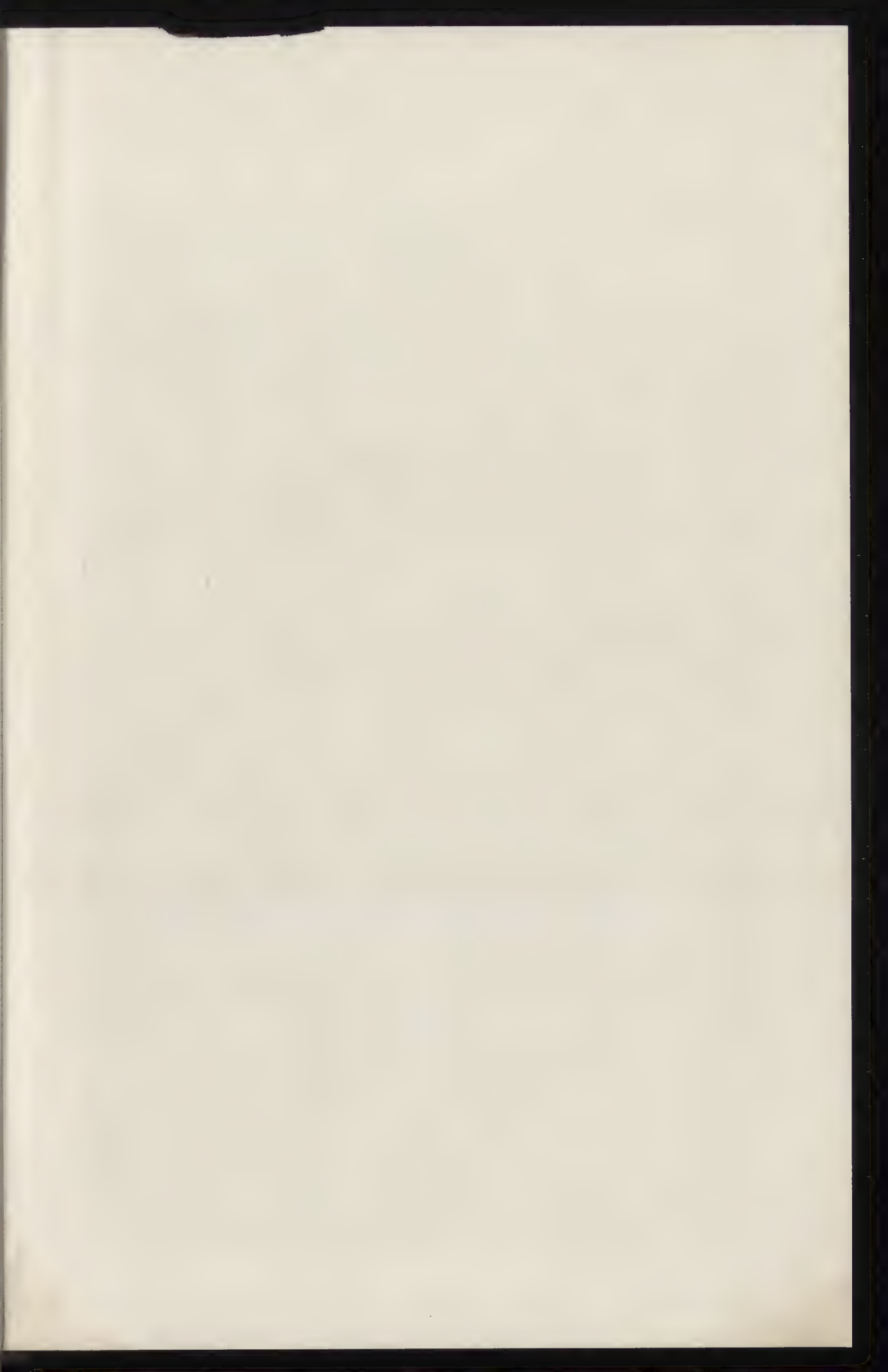
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VIEW OF THE FORUM.

The
Architectural Record.

VOL. IV.

JULY-SEPTEMBER, 1894.

No. 1.

MODERN ARCHITECTURE.*



THE subject that has been assigned to me is that which I should have chosen had I been left free to choose. It is more true, perhaps, of architecture than of any other of the arts that deal with form that the prosperity and advancement of it depend upon the existence of an enlightened public as well as of skillful practitioners. It is true that the public, any public, is enlightened by the efforts of the practitioners and can be enlightened in no other way. The philosophy of art at least is a philosophy teaching by examples. It is only by familiarity with admirable examples that we come to admire rightly. A sense of responsibility for one's admirations may be called the very beginning of culture, nor can a culture be deemed complete that does not include a discriminating judgment of the works of the oldest and the most pervading of all the arts. It is not to be expected, nor perhaps to be desired, that an educated layman shall possess theories of art and standards of judgment either acquired for himself or derived from others. But it is very much to be desired that he shall have a sense so habitual and automatic that it may well seem to be instinctive of the fitness or unfitness, congruity or incongruity, beauty or ugliness of the buildings that he daily passes, and that in any case must exert upon him an influence that is not the less but the more powerful for being unconsciously felt. Such a sense comes most readily and most surely from the habitual contemplation of excellent works. It is the birthright of a man who has been born and reared in a country in which admirable monuments have been familiar to him from childhood. It is a means of education from which we in this country are necessarily to a great degree debarred, for I suppose it will not be denied that there are many American communities in which one may grow up to manhood without once having sight of a respectable specimen of the art of architecture. I remember standing in the square upon which fronts the Cathedral of Rouen, one of the loveliest of the legacies the Middle Ages have bequeathed to modern times, and watching the busy throng of Frenchmen and Frenchwomen, the citizens of a bustling modern town, that passed beneath it. There was scarcely one, of whatever rank in life, that did not pause, in passing, long enough to cast one recognizing and admiring glance at the weatherworn and fretted front. Think what an education the daily sight of such a monument constitutes, how it trains the generations that are reared in its shadow, and how deeply a people so unconsciously trained would fail to admire the very smartest and most ornate edifices of many American towns. It seems to me that something of the same beneficial influence is shed upon the people of New York from the spire of Old Trinity, as it soars serenely above the bustle of Broadway, and stops the vista of Wall

* Butterfield Lecture delivered at Union College, Schenectady, N. Y., March 9, 1894.

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Street, or upon the people of Boston by the ordered bulk of the tower of the new Trinity looming so large over the dwellings of the Back Bay.

You may retort upon me that the influence of the cathedral of Rouen is not perceptible in the modern architecture of Rouen; but there is much to be said in behalf of the modern architecture that surrounds Rouen cathedral, as of the modern architecture that surrounds Notre Dame of Paris, in comparison with the current architecture of our American towns. I shall not be charged with underrating the essential differences between the mediæval and the modern architecture of France and of Europe, or with overrating the modern architecture, because the difference is in a manner the main theme upon which I have to address you. It seems to me one of the most pointed contrasts that the world affords between a living and progressive and a conventional and stationary art. But the modern building, the current building of France, and more or less of Europe in general, is distinguished in this comparison with the current building of American towns—and in either case I am speaking not of the exceptional works of artists, but of the prevailing and vernacular work of journeymen—it is distinguished by certain qualities that we must admit to be valuable, by sobriety, by measure, by discretion. Very much of this comes, no doubt, from the learning of the schools, from the learning in particular of the great school that since the time of the great Louis has dominated the official architecture of France, and the influence of which is transmitted as we see to the common workman. You will remember that these qualities of sobriety, measure, discretion are the very qualities which Mr. Matthew Arnold finds to distinguish French literature in the comparison with English literature, and which, in that well-known essay of his upon "The Literary Influence of Academies," he attributes so largely to the existence of the French Academy. I cannot help thinking that he exaggerates this influence, and that the undeniable difference is more largely due than he admits to national characteristics and less largely to the machin-

ery of institutions. In the national building, however, the national school of France has without doubt had a great influence. It is an influence which is spreading over the world, and which has already established a distinct cult of its own among American architects that is at present perhaps the dominant influence in our own architecture, an influence the nature of which I shall ask you to consider. But these excellent qualities which French building shows in comparison with American building seem to me to be also due largely to the existence of relics of the great art of the past. In England, where there has never been any official inculcation of architecture, the current building is characterized in comparison with our own, though in a less degree, by the same qualities that characterize the French building. It is less violent, more restrained, more decorous. And England, like France, possesses those monuments the very presence of which seems to temper crudity and to repress eccentricity, to make impossible the architectural freaks that seem to be spontaneously generated in the absence of their restraining influence.

It is not many years since an English traveler, not an architect, but a traveled and cultivated man of the world, delivered the opinion that there was no country in the world in which the art of architecture was at so low a stage as in the United States. He had just traversed the continent and there was certainly no malice in his remarks, the spirit of which was entirely amicable. There can be little doubt that his saying simply reflected the impression that an experience like his would be apt to make upon any cultivated European. It is the impression derived, not from the buildings that are the boast of a few towns, the exceptional and artistic performances, but from a general survey of the building of the country. The building is doubtless more crude and provincial, as a rule, in the newer than in the older parts of the country, and one main reason for this is that the older parts of the country, the towns of the Atlantic seaboard that comprised the colonies, contained examples of col-

onial building that were as nearly as the builders could make them examples of the current architecture of the old country. They were not very many in number nor very extensive in scale, nor very durable in construction. But every one of the Atlantic towns possessed one or more of them that have lasted to our own time or nearly so, and that gave to the builders who lived and worked in their presence examples of measure and sobriety and discretion that tended to preserve them from the excesses of the pioneer builders who had not the advantage of any models whatever.

It is not to be wondered at that some twenty years ago many of the young architects of this country should have become so revolted by the extravagance and the crudity of the current building as to revert to the colonial building for models. And this accounts for the vogue, short lived as it was, which the so-called Queen Anne fashion of building had in this country. Although the revival of it was imported from England and not developed here, it was connected with this admiration for the colonial work which, though it was commonly tame, was at least never wild. The crudity of much of the work that was done during the Gothic revival set architects to studying the classic detail of the old mansions, although a knowledge of this detail was simply part of the stock in trade of the carpenters and the plasterers who were imported during the eighteenth century, and continued to be part of the stock in trade of their successors during the first quarter at least of the nineteenth. Though Queen Anne, specifically so called, was a very passing fashion, the preference for classic detail, as an orderly and understood assemblage of forms in the use of which it was difficult to attain a positively offensive result, survived Queen Anne, and has been so potent ever since that the present tendency of architecture in this country is a reversion to the Renaissance that has prevailed in Europe for the past three centuries. This tendency has been very powerfully promoted by the increasing influence on this country of the Paris school of

fine arts, of which the pupils, filled with its traditions, are every year returning in increased numbers to take part in the building of the United States. Especially has this tendency been stimulated just now by the brilliant success of the architecture of the Columbian Exposition, which was essentially a display, on an imposing scale, of modern French architecture; though it is also true that some of the architecture even of the World's Fair was French not so much after the *École des Beaux Arts* as "after the *School of Stratford atte Bowe*."

The attractiveness of the French ideal in architecture is so great that it has imposed itself all over Europe, inasmuch that the new quarters of nearly all European cities are becoming imitations of Paris. It is visibly tending to impose itself upon this country also; under the influences to which I have referred, the revolt against the crudity of our unschooled vernacular building and the zealous propagandism of the pupils of the *Beaux Arts*, and of the architects whom they have in their turn influenced. It would be folly to dispute that the training of the French school, upon which the architectural training of all Europe is more or less modeled, is a most valuable training in qualities and accomplishments that are common to all architecture and that are needed in all architecture. Founded as it is upon the study of the classic orders, it confers or cultivates a perception of proportion and relation, of adjustment and scale, in other words, of that sobriety, measure and discretion which, in whatever style they may be exhibited, or whether they be exhibited in works not to be classified under any of the historical styles, so plainly distinguish the work of an educated from the work of an uneducated architect, precisely as the literary work of a man who has studied the models of literature is distinguished from that of an uneducated man. One may freely own that the current architecture of Europe is more admirable than the current architecture of America, and that, if that were all, those architects would have reason who urge us to adopt current European methods in the study of archi-

ture and to naturalize, or at least to import current European architecture. But it is not American architecture alone, it is modern architecture in general that leaves a great deal to be desired as the expression in building of modern life. It is not only our own country, but it is the time that is architecturally out of joint. No thoughtful and instructed person who considers what an expression classic architecture was of classic life, or mediæval architecture of mediæval life, is satisfied with modern architecture, for the reason that no such student can regard it as in the same degree or in the same sense an expression of modern life. The French seem indeed to be very well satisfied with the result of their methods of instruction and practice, but it is worth while to remember that the whole professional and literary life of that French architect whose writings have had the strongest influence upon this generation of readers—I mean Viollet-le-Duc—was a protest against the aims and the methods of the *École des Beaux Arts*, and the academic architecture which it produced, as unrepresentative of modern French life, as unreasonable and untrue. So inveterate and so radical was his opposition to the manner in which architecture was taught at the French national school, the training of which is held up to us as a completely adequate model, that on his appearance there as a lecturer he was mobbed by the students whom he was invited to address, and to whom his criticisms seemed to be almost in the nature of blasphemy.

The late Mr. Richardson, whose great services to the architecture of this country no one will deny, who was himself a graduate of the *École des Beaux Arts* and who brought its training to the solution of American architectural problems, bore interesting testimony in the same direction. He told me that, revisiting France many years after his academic experiences in Paris, and when he himself was at the height of his success and celebrity, he had looked up those who had been the most promising of his fellow-students. He found them well-established archi-

itects and many of them occupying the position, so much coveted in France, of government architects. But he found them—I do not remember that he made any exceptions, but at any rate he found many of them—deeply dissatisfied with the official architecture which was imposed upon them by the necessities of their careers, lamenting that they were not at liberty to transcend the trammels of the official style, and envying him the freedom he enjoyed in this respect as a practitioner in America and not in France. Surely we may very well hesitate before acknowledging that a system which is thus deprecated, by theorists on the one hand and by practitioners on the other, as inadequate to the architectural needs of the country from which it is derived and in which it has been naturalized for two hundred years, and as incompetent to produce the architectural expression of French life, may be transplanted with confidence as promising complete satisfaction of our own needs, and as offering us the expression in architecture of American life.

How are we to explain the anomaly thus presented? While every other art is living and progressive, architecture is by common consent stationary, if it be not actually retrograde. In every other art the artists have their eyes on the future. They do not doubt that the greatest achievements of their arts are before them and not behind—

“That which they have done but earnest of the things that they shall do.”

In architecture alone men look back upon the masterpieces of the past not as points of departure but as ultimate attainments, content, for their own part, if by recombining the elements and reproducing the forms of these monuments they can win from an esoteric circle of archæologists the praise of producing some reflex of their impressiveness. This process has gone so far that architects have expected and received praise for erecting for modern purposes literal copies of ancient buildings, or, where the materials for exact reproduction were wanting, of ingenious restorations of those buildings.

In architecture alone does an archaeological study pass for a work of art. The literature of every modern nation is an express image of the mind and spirit of the nation. The architecture of every modern nation, like the dress of every modern nation, is coming more and more to lose its distinctiveness and to reflect the fashion of Paris. It was not always so. The architecture of Greece and Rome tells us as much as antique literature tells of Greek and Roman life. Mediæval architecture tells us so much more of mediæval life than all other documents of that life that they become insignificant in the comparison, and that from their monuments alone the modern man can succeed in penetrating into the spirit of the Middle Ages. Nay, in our own time the architecture of every country outside the pale of European civilization is a perfectly adequate and a perfectly accurate reflex of the life of that country.

I have spoken of the analogy between architecture and literature. It seems to me that it is not fantastic, and that if we follow it it may lead us to a comprehension of the very different state of the two arts to-day. Nobody pretends that modern literature is not an exact reflex of modern civilization. If we find fault with the condition of it in any country we are not regarding it as a separate product which could be improved by the introduction of different methods. We are simply arraighing the civilization of the country, thus completely expressed. If we find one literature pedantic, another frivolous and another dull, we without hesitation impute these defects as the results of national traits. The notion that any modern literature is not a complete expression of the national life no more occurs to us than the notion that any modern architecture is such an expression.

Now, modern architecture, like modern literature, had its origin in the revival of learning. The Italian Renaissance in architecture was inextricably connected with that awakening of the human spirit which was the beginning of modern civilization. It is not that classic models have been discarded or neglected in the one art and retained

in the other, for down to our own generation at least a liberal education, a literary education, has been a classical education. Whatever the baccalaureate degree is coming to mean now, for several centuries it has meant a knowledge of the masterpieces of Greek and Roman letters, as the education of an architect has during the same time implied a knowledge of the masterpieces of Greek and Roman building. A main difference has been that in literature the classical models have been used, and in architecture they have been copied. If writers had hesitated, even while Latin was the universal language in Europe, to use locutions "that would have made Quintilian stare and gasp," it seems to me quite certain that there could have been no literary progress, while it seems to be almost a tenet of the architectural schools, and at any rate it is a fair deduction from modern academic architecture that no architectural progress is possible. There, alone in the work of mankind, the great works of the past are not alone useful for doctrine, for reproof, for correction, for instruction, are not even models in the sense in which we use the word in reference to other arts, but are "orders" to be carried out as literally as the conditions will allow, are fetiches to be ignorantly worshiped and invested with mysterious powers.

At the time of the revival of learning the purists were as strenuous in literature as they are even yet in architecture, and for a time as prevailing. The literary classics were to them what the architectural classics still are to the practitioners of official architecture, and the vocabulary of the ancients as sacred a repertory of words as the orders of the ancients a repertory of forms, to which nothing could be added without offense. To them it was not requisite that a writer should express his mind fully; it was not even necessary that he should have anything to say, but it was necessary that his Latinity should be unimpeachable. So long and so far as it was enforced, the restriction to the ancient vocabulary had as deadening an effect upon literature as the like restriction still has upon

architecture. Lord Bacon has given an excellent account in a few sentences of the consequence of this "more exquisite travail in the languages original" upon the progress of literature and the advancement of learning. "Men began to hunt more after words than matter; more after the choiceness of the phrase and the round and clean composition of the sentence, and the sweet falling of the clauses * * than after the weight of matter, worth of subject, soundness of argument, life of invention or depth of judgment." The literary purists of the Renaissance were inevitably impatient of men who were preoccupied with what they had to say rather than with their way of saying it, and were especially incensed against the school philosophers "whose writings," to quote Bacon again, "were altogether in a different style and form, taking liberty to coin and frame new terms of art to express their own sense, and to avoid circuit of speech, without regard to the pureness, pleasantness, and, as I may call it, lawfulness of the phrase or word." Substitute "form" for "phrase or word" and you have here an exact statement of the respective positions of the progressive architect and of the architectural purist, and of the reason why it is out of the question that architecture should advance when the teaching and the practice and the judgment of it are confided to the architectural purists.

In literature the restriction did not last long. If it could have lasted it would have arrested the literature and the civilization of Europe, for a demand that nothing should be expressed in new words was in effect a demand that nothing new should be expressed. Such a restriction, when the human spirit had once been aroused, it could not accept. The instinct of self-preservation forbade its acceptance. Men who had something to say insisted upon saying it, saying it at first in barbarous Latin, to the pain of the purists who had nothing to say and did not see why anybody else should have anything to say that could not be expressed in the classical vocabulary; saying it afterwards in "the noble vul-

gar speech" which at first, and until it had been developed and chastened and refined by literary use, seemed cruder and more barbarous still. The progress of mankind being at stake, the purists in literature were overwhelmed. Only the progress of architecture being at stake in the other case, the purists have prevailed and architecture has been sacrificed, with only local and sporadic revolts, and these for the most part within our own century, in place of the literary revolution that was triumphantly accomplished four centuries ago.

It was not accomplished without a struggle. The "more exquisite travail in the languages original," when there was no other but classical literature, had induced in scholars the belief that the masterpieces of that literature would never be equaled. It is, I believe, still questioned by scholars whether the classic masterpieces have been equaled even yet; while it is the opinion of scholars that the languages in which they were composed are still the most perfect orders of speech that have existed. It was natural, then, that men who had nothing in particular to say, or at any rate felt no urgent need of expressing themselves, should have deemed that classic literature was complete as well as impeccable, and that its limitations could not be transcended. Fortunately for us all, there were other men who felt, with Browning, that

"It were better youth
Should strive, through acts uncouth,
Toward making, than repose on aught found
made,"

and these men were the greatest scholars as well as the greatest thinkers of the age. Politian, of whom it has been said by a critic of our own time that he "showed how the taste and learning of the classical scholar could be grafted on the stock of the vernacular," ridiculed the purists in better Latin than their own. "Unless the book is at hand from which they copy," he said, "they cannot put three words together. I entreat you not to be fettered by that superstition. As nobody can run who is intent upon putting his feet in the footsteps of another, so nobody can write well who does not dare to depart

from what is already written." And while the Italian scholar was deriding the Italian pedants, the Dutch scholar, who did not even look forward to a time when the vernacular should supplant Latin, yet protested against the imposition of classic forms as shackles upon modern thought. "Hereafter," said Erasmus, "we must not call bishops reverend fathers, nor date our letters from the birth of Christ, because Cicero never did so. What could be more senseless, when the whole age is new, religion, government, culture, manners, than not to dare to speak otherwise than Cicero spoke. If Cicero himself should come to life, he would laugh at this race of Ciceronians."

It would be as presumptuous in me as it is far from my intention to disparage academic training, in architecture or in literature. The men who have done most towards building up these great literatures that are at once the records and the trophies of modern civilization have for the most part been classical scholars, and classical scholarship stood them in particularly good stead when they worked in the vernacular, especially during the formative periods of these literatures, when there were as yet no standards or models but those of antiquity. Perhaps what seems to us the most autochthonous of our literature owed more to this culture than we are apt to suppose. "I always said," Dr. Johnson observes, "that Shakespeare had enough Latin to grammaticise his English." These writers derived from their classical studies a literary tact that could have been imparted so well in no other way. Certainly the same thing is true of the classically trained architects. Whether they are working in the official style that has been the language of their schools, or have attempted the idiomatic and vernacular treatment of more extended and varied methods of construction than the very simple construction of Greece, which was expressed with consummate art, and the more ambitious and complicated construction of the Romans, which yet is simple compared with our modern constructions and which cannot be said to have attained its artistic expression; in either case

there is equally in their work this tact, this measure and propriety that bespeak professional training. It is not the training that I am deprecating, but the resting in the training as not a preparation but an attainment. There is another pregnant saying of Bacon that would well recur to us when we see the attempt to meet modern requirements without departing from antique forms, and to carry out academic exercises in classic architecture into actual buildings: "Studies teach not their own use, but that is a wisdom without them and above them, won by observation." It is as if an educated man in our day should confine his literary efforts to Latin composition. Very curious and admirable essays have been made even in modern Latin and even in our own time. To see how near one can come to expressing modern ideas in classical language is an interesting and useful exercise, by the very force of the extreme difficulty of even suggesting them, and the impossibility of really expressing them. When the modern Latinist has finished this circuitous and approximative progress he has produced what—a poem? No, but only an ingenious toy for the amusement of scholars, a "classic design." If he devoted his whole literary life to the production of such things we should be entitled to pronounce decisively that he had nothing to say, or he would take the most direct way of saying it. It would be evident that he was preoccupied with the expression and not with the thing to be expressed, not with the idea but "with the pureness, pleasantness and, as I may call it, lawfulness of the phrase or word."

A living and progressive classic poetry, in our day, we all perceive to be merely a contradiction in terms. Classicism is the exclusion of life and progress; and a living and progressive classic architecture is in fact equally a contradiction in terms. Forms are the language of the art of building and architectural forms are the results and the expression of construction. This is true of the architecture of the world before the Renaissance, excepting the Roman imitations of Greek architecture. It is true even now of the archi-

ture of all that part of the world which lies outside the pale of European civilization. It is only since the Renaissance, and in Europe and America, that classic forms has been used as an envelope of constructions not classic, and that the attempt to develop building into architecture has been abandoned in favor of the attempt to cover and to conceal building with architecture. This attempt is beset with difficulties, by reason of the modern requirements that cannot be concealed. I have heard of a classic architect saying that it was impossible to do good work nowadays on account of the windows. This is an extreme instance, doubtless, but the practitioner of classic architecture must often be as much annoyed by the intrusion of his building into his design, and the impossibility of ignoring or of keeping it out altogether, as the modern Latin poet by the number of things of which the classic authors never heard that he has to find words for out of the classic authors. The versifier does not venture to complain in public, because everybody would laugh at him, and ask him why he did not write English. But the classic architect is not afraid to make his moan, and to complain of the intractability of modern architectural problems, or to excuse himself from attempting a solution of them upon the ground that they do not fit the classic forms. He is not likely to find sympathy in his complaint of the oppressiveness of shackles which, in this country at least, he has voluntarily assumed. Why should we not laugh at him also? He, too, may be recommended to write English, which in his case means to give the most direct expression possible to his construction in his forms, and to use his training to make this expression forcible, "elegant" and scholarly; poetical, if the gods have made him poetical; at any rate, "to grammaticise his English" instead of confining himself to an expression that is avowedly indirect, circuitous, conventional and classic, a "polite language" like the Latin of modern versifiers. *Si revivisceret ipse Cicero, rideret hoc Ciceronianorum genus.*

The repertory of the architectural

forms of the past is the vocabulary of the architect. But there is this difference between his vocabulary and that of the poet, that a word is a conventional symbol, while a true architectural form is the direct expression of a mechanical fact. Any structural arrangement is susceptible, we must believe, of an artistic and effective expression. Historical architecture contains precedents, to be acquainted with which is a part of professional education, for many if not for most of the constructions commonly used in modern building. But classic architecture does not contain them. The Greek construction is the simplest possible. The more complicated Roman construction was not artistically developed and expressed by the Romans themselves and the literary revivalists of classic architecture of the fifteenth century restricted themselves and their successors to the Roman expression without very clearly understanding what it was. They were more royalist than the king, more Ciceronian than Cicero. If we are to accept the statement of Viollet-le-Duc, Vitruvius himself, if he had submitted his own design, as he describes it, for the basilica of Fano, in a competition of the École des Beaux Arts at the beginning of this century, would have been ruled out of the competition for his ignorance of Roman architecture. But in any case, the classical building embraces but a small part of the range of constructions that are available to the modern builder. To confine one's self to classic forms means therefore to ignore and reject, or else to cloak and dissemble, the constructions of which the classic builders were ignorant, or which they left undeveloped, to be developed by the barbarians. And here comes in another restricting tenet of the schools, that you must not confuse historical styles. No matter how complete an expression of an applicable construction may have been attained, if it does not come within the limits of the historic style that you have proposed to yourself, it is inadmissible. This is not a tenet of the official schools exclusively. It is imposed wherever architecture is prac-

ticed archæologically. In the early days of the Gothic revival in England, Gothic building was divided and classified, more or less arbitrarily, and it would fatally have discredited an architect to mix Early English and Middle Pointed, or to introduce any detail for which he had not historical precedent, and this without regard to the artistic success of his work but only to its historical accuracy. It was not until the architects of the revival outgrew this superstition that their work had much other than an archæological interest. Any arbitrary restriction upon the freedom of the artist is a hindrance to the life and progress of his art. While it is no doubt more difficult to attain unity by the use of constructions that have been employed and expressed in different ages and countries than by renouncing all but such as have been employed together before, and have been analyzed and classified in the schools, the artist is entitled to be judged by the success of his attempts and not to be prevented from making it. American architects are happy in being freer than the architects of any other country from the pressure of this convention. By the introduction of the elevator, some twenty years ago, an architectural problem absolutely new was imposed upon them, a problem in the solution of which there were no directly available and no directly applicable precedents in the history of the world. That many mistakes should be made, and that much wild work should be done was inevitable. But within these twenty years there has been attained not only a practical but in great part an artistic solution of this problem presented by the modern office building. The efforts of the architects have already resulted in a new architectural type, which in its main outlines imposes itself, by force of merit, upon future designers and upon which future designers can but execute variations. This is really a very considerable achievement, this unique contribution of American architects to their art. While the architects who have had most to do with establishing it have been learned and trained as well as thought-

ful designers, it seems to me that they have had advantages here that they could not have enjoyed where conventional and academic restrictions had more force. Certainly, in all the essays that have been made towards the solution of this new problem, none have been less fortunate and less successful than those of academically trained architects, who have undertaken to meet a new requirement by an aggregation of academic forms, and to whom studies had not taught their own use. But the problem is by no means yet completely solved. The real structure of these towering buildings, the "Chicago construction," is a structure of steel and baked clay, and when we look for an architectural expression of it, or for an attempt at an architectural expression of it, we look in vain. No matter what the merits or demerits may be of the architectural envelope of masonry, it is still an envelope, and not the thing itself, which is nowhere, inside or out, permitted to appear. The structure cannot be expressed in terms of historical architecture, and for that reason the attempt to express it has been foregone. The first attempts to express it must necessarily be rude and inchoate. The new forms that would result from these attempts would be repellent, in the first place because of their novelty, even if they were perfect from the beginning; in the second place, because in the nature of things and according to the experience of mankind, they cannot be perfect from the beginning, for the labors not only of many men but of many generations have been required to give force and refinement to the expression in architectural forms of any system of construction. If the designer, however, is repelled by the strangeness of the forms that result from early attempts to express what has not been expressed before, if "youth" will not "strive through acts uncouth toward making" but takes refuge in "aught found made," that is the abandonment of progress. The Chicago construction doubtless presents a difficult problem. All problems are difficult till they are solved. But the difficulty is no greater than other difficulties that have been



THE FORTH BRIDGE.

encountered in the history of architecture and that have been confronted and triumphantly overcome. Is there anything in modern construction that is *a priori* more unpromising, as a subject for architectural treatment, than a shore of masonry, built up on the outside of a wall to prevent it from being thrust out by the pressure from within? I do not know what the modern architect would do as an artist if as a constructor he found it necessary to employ such a member. In the absence of applicable precedents he would be apt to conclude that so ugly an appendage to his building would not do to show, and to conceal it behind a screen-wall nicely decorated with pilasters. But the builders upon whom the use of this member was imposed, not having enjoyed the advantage of a classical education, saw nothing for it but to exhibit the shore and to try to make it presentable by making it expressive of its function. Their early efforts were so "uncouth" that the modern architect, if he had seen the work at this stage, would have been confirmed in his conclusion that the shore was architecturally intractable. The mediæval builders kept at work at it, master after master, and generation after generation, until at last they made it speak. Made it speak? They made it sing, and there it is, a new architectural form, the flying buttress of a Gothic cathedral, an integral part of the most complicated and most complete organism ever produced by man, one of the organisms so like those of nature that Emerson might well say that—

"Nature gladly give them place,
Adopted them into her race,
And granted them an equal date
With Andes and with Ararat."

The analogy is more than poetically true. In art as in nature an organism is an assemblage of interdependent parts of which the structure is determined by the function and of which the form is an expression of the structure. Let us hear Cuvier on natural organisms.

"A claw, a shoulder-blade, a condyle, a leg or arm-bone, or any other bone separately considered, enables us to discover the description of teeth to which they have belonged; so also re-

ciprocally we may determine the form of the other bones from the teeth. Thus, commencing our investigations by a careful survey of any one bone by itself, a person who is sufficiently master of the laws of organic structure may, as it were, reconstruct the whole animal to which that bone had belonged."

This character of the organisms of nature is shared by at least one of the organisms of art. A person sufficiently skilled in the laws of organic structure can reconstruct, from the cross-section of the pier of a Gothic cathedral, the whole structural system of which it is the nucleus and prefigurement. The design of such a building seems to me to be worthy, if any work of man is worthy, to be called a work of creative art. It is an imitation not of the forms of nature but of the processes of nature. Perhaps it was never before carried out so far or so successfully as in the thirteenth century. Certainly it has not been carried out so successfully since. This has not been for lack of constructions waiting to receive an artistic expression, for mechanical science has been carried far beyond the dreams of the mediæval builders, and the scientific constructors are constantly pressing upon the artistic constructor, upon the architect, in new structural devices, new problems that the architect is prone to shirk. He is likely to be preoccupied with new arrangements and combinations of historical forms. He asks himself, as it has been said, not what would Phidias have done if he had had this thing to do, but what did Phidias when he had something else to do. An architectural form, being the ultimate expression of a structural arrangement, cannot be foreseen, and the form which the new expression takes comes as a surprise to its author. He cannot more than another tell beforehand with what body it will come. Take one modern instance, the so-called cantilever of modern engineering. Some of you may be familiar with representations of the Forth bridge in Scotland, in which that recent device has been used upon the largest scale thus far and with the most impressive results. There is one of the new architectural forms for which we are unthinkingly asking. Is it conceivable



THE "JEAN BART."

(See opposite page)

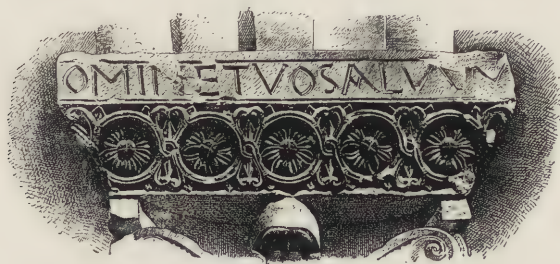
that this form could have occurred to a man who sat down to devise a new form, without reference to its basis and motive in the laws of organic structure? And so it is always with real architectural forms. There have been very voluminous discussions within this century upon the "invention" of the pointed arch, discussions which have come to little because they have started from a baseless assumption. Architectural forms are not invented; they are developed, as natural forms are developed, by evolution. A main difference between our times and the mediæval times is that then the scientific constructor and the artistic constructor were one person, now they are two. The art of architecture is divided against itself. The architect resents the engineer as a barbarian; the engineer makes light of the architect as a dilettante. It is difficult to deny that each is largely in the right. The artistic insensibility of the modern engineer is not more fatal to architectural progress than the artistic irrelevancy of the modern architect. In general, engineering is at least progressive, while architecture is at most stationary. And, indeed, it may be questioned whether, without a thought of art, and, as it were, in spite of himself, the engineer has not produced the most impressive, as certainly he has produced the most characteristic monuments of our time. "A locomotive," says Viollet-le-Duc, "has its pe-

culiar physiognomy, not the result of caprice but of necessity. Some say it is but an ugly machine. But why ugly? Does it not have the true expression of brutal energy?" The modern battle ship is purely an engineering construction, developed in accordance with its functions as a fighting-machine, and without conscious reference to the expression of these functions. Yet no one who has seen a typical and completely-developed example of the modern war ship, such as the *Jean Bart*, which has been seen in American waters, needs to be told that it is a more moving expression of the horrors of war than has ever been seen in the world before; that no poet's or painter's dream of

"That fatal and perfidious bark,
Built in the eclipse and rigged with curses dark,"

appeals with anything like so much force to the imagination as this actual, modern and prosaic machine of murder. What may we not hope from the union of modern engineering with modern architecture, when the two callings, so harshly divorced, are again united, and when the artistic constructor employs his cultivated sensibility and his artistic training, not to copying, but to producing, no longer to the compilation of the old forms, but to the solution of the new problems that press upon him; when he shall have learned the use of the studies that teach not their own use.

Montgomery Schuyler.





THE BRIDGE AT ALCANTARA.

ARCHITECTURE IN SPAIN.

I.



ST I stood one evening in the large openings of the Sala de Embarjadores in the Alhambra looking out upon one of the most beautiful sights that the old palace affords, I was struck with the total difference between the architectural methods which imbued the Moslem and the Christian builders of Spain.

Around and above you is the intricate network of arabesque ornamentation, so beautifully refined, once vivid and gorgeous in color-effect, but now softened by the hand of time. The walls are of immense thickness, and the slim columns with their perforated spandrels seem insufficient to carry their superincumbent weight, and above you is a ceiling of wood honeycombed with stalactite pendentives. Below you are the bright groves and walks along the river Darro, and if you listen you may hear

strains of music which seem to dull the senses into a sort of voluptuous repose and cause you to forget the years that have elapsed since Moslem hands reared the walls around you. The sun, regardless of Moorish palace or Gothic shrine, sinks lower and lower over the Vega, and breathes out a golden effulgence which calls to mind a thousand and one dreams of poetic fancy. It is the effect of an art foreign to the ideas of the Gothic builders, and contrasts so strongly with the almost gloomy pointed architecture which we have visited, that the architect notes the difference at once. It speaks of such distinct differences of art, that it is natural in speaking of the Architecture of Spain to divide the subject into three heads at least, the first of which, without wholly omitting mention of prehistoric Roman works would treat of the works of the Moors during the eight centuries after their conquest in 711 A.D.

And since as a matter of fact many of the best works in other styles were erected during the same period of time, the second division would be even more important than the first, and would leave us then (3) to inquire into the work that was done in Spain after the expulsion of the Moors in 1492. To a thoughtful mind the differences of these styles would lead at once to a question as to how far the invasion of this mysterious people moved the builders of Spain in their subsequent work.

Since the above division of the subject does not give any decided impression of the different styles that we shall find in Spanish Architecture, it may be well at the commencement to put down a few century posts which in a few words will classify the subject. We shall find after the Roman works much of the Byzantine style up to the tenth century. Of course the Moorish work will be found from the eighth to the fifteenth centuries, while woven in with it we shall note the important works in the Romanesque style from the eleventh to the thirteenth century. Then come the magnificent works of the pointed style, and the less important Modejar, which ran from the thirteenth to the sixteenth century. Finally, it would be unjust to the study of the Art in Spain unless we touched on those styles which being variously influenced by the Art of other countries brought out works which have been placed under the headings of Renaissance, Plateresque and Churrigueresque styles: but of these we shall touch lightly as they are by far the least important increments in the fabric of Spanish Architecture. They will be found in the fifteenth, sixteenth and seventeenth centuries.

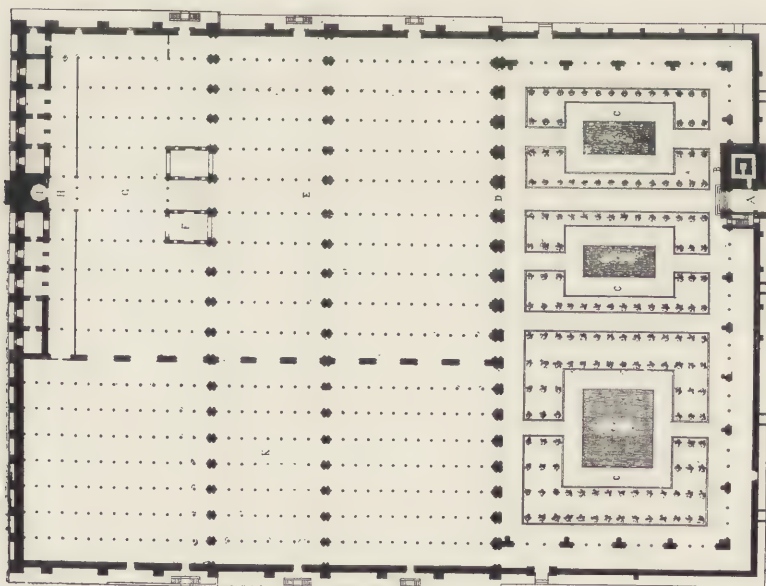
It is a noticeable fact that wherever the Romans placed their foot they left their mark behind them, a mark, too, not easily obliterated. They were noble builders, the Romans, stern and simple in design, grand in conception and strong in construction.

As you approach picturesque Segovia, in the centre of Spain, you see before you a deep valley between the town and the surrounding mountain country. It is over 100 feet deep, and

in order to bring water from these mountains the Romans followed out their instincts as mighty builders, and since the water ten miles off would not come to them, they accommodated themselves to the water, and threw a huge aqueduct across the valley for its accommodation. This was before the invasion of the Moors and was said to have been in the time of Trajan. This aqueduct itself is over 100 feet high, built of granite in stones of huge size, and is constructed in two enormous tiers of arches without cement or mortar. Like the Pont du Gard at Nismes, it teaches a lesson in construction not to be forgotten. It is a Spanish possession, yet totally unlike Spain; one sight of it marks its period as well as if the carver had left in huge letters the legend of its Roman origin. It is large, grand and monumental! In like manner the famous bridge of Alcantara shows clearly the marked peculiarity of the Roman mind. From examples of a like character in almost every other country it is fair to assume that no other nation (except possibly the Egyptians) would have spanned the lordly Tagus in a manner that would have its birthmark so indelibly stamped.

Toledo stands on a rocky promontory almost girdled by the river, which for ages has boiled through the rent in the Castilian mountains; it is necessary to gain its approach from the eastern hillside, and the Roman spirit leaving only a small arch on the land approach, spanned the river at a single jump. As you wind around the spur of the mountain, this view of the bridge strikes you full in the face, and you have but one word to express your admiration. It is Roman!

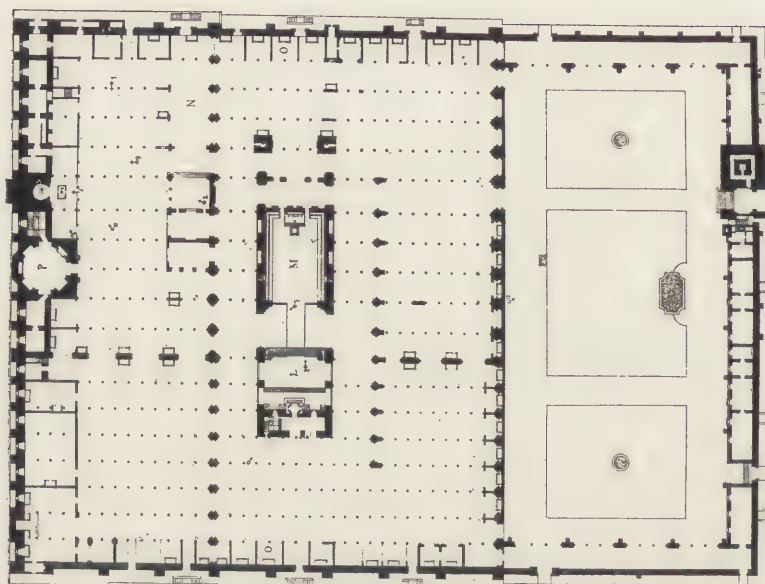
Without speaking of more examples of this character of work in Spain, it will be sufficient to say that other most interesting monuments of Roman skill are to be found in Tarragona, Murviedro, Italica and Merida, all following this general character, and expressing better than words can tell the monumental character of the nation which gave them birth. As a matter of course this would follow, since any country in making conquest is likely to express its own ideas of art in its Architecture. It



PLAN OF BUILDING AS IN THE TIME OF THE ARABS.

THE MOSQUE, CORDOVA.

Dates of Construction: A, D, 786; 796; 961; 967; 988; 1001; 1523; 1593.



PLAN OF BUILDING AS AT PRESENT.



ENTRANCE TO THE MOSQUE, CORDOVA.

is less true, however, of Spain than almost any other country, for we cannot really give it credit for being the father of any good style; the Romans, the Moors, the French and the Germans, as well as the Spaniards, each in turn worked on its soil, and formed whatever of art there is in the country. Exception to this statement might possibly be found in that mixture of styles known as the Mudejar style.

This truism leads one to speak more fully of this point. We are apt to think of Spain as being the possessor of a style which we dub Spanish architecture, and to have a sort of instinctive feeling that it is the outcome of a poetic feeling which pervades the literature and history of the country, an atmosphere of imagery full of Eastern splendor. Undoubtedly the charming Spanish romances of life and character and the fierce struggles between Christian and Pagan art has led to this mistaken idea, for that part of the architecture which most fully carries out this feeling is not Spanish at all, but distinctly Moorish, and it is thus to this art that we should turn our thoughts more fully.

The Moors were a noble race in truth, and for eight centuries they held a footing in the country which they had invaded and conquered. They brought with them the poetic fancies of the East, full of the splendor of a sunny land. They adorned the country by a cultivation of art and science, and in their architecture built with an exuberance of ornament and a free use of color which is fascinating in the extreme. Such work could never have been done by a European nation.

The invasion of the Moors was in 711 A. D., when King Roderic and the fairest of the nobility succumbed to the fierce onslaughts of the Pagans. This was on the plains of Guadalete near Cadiz, and ere long their sway extended Eastward and Northward. The magnificence of the conquerors was at once shown in their public edifices, and nowhere more fully than at Cordova, the capital of the empire. Their first work was a palace at Azahra, of which naught remains. History, however, affirms that it was more wonderful by

far than the Alhambra, formed of lakes and hanging gardens, courts and halls, whose construction was marvelous and whose decoration was full of ivory and gold inlays. Of the Mosque at Cordova, however, we may speak understandingly, and, since it was one of the first and largest works executed by the Moors, it will serve as an illustration of their spirit in ecclesiastical work.

It was commenced by Kaliph Abd-el-Rahman in the year 786 A. D., and completed by his son Haschem. There had formerly been a basilica on the spot, but the Moors desiring to perpetuate their name by a building that should rival the finest sanctuaries of the East bought and tore down the old work and commenced the new.

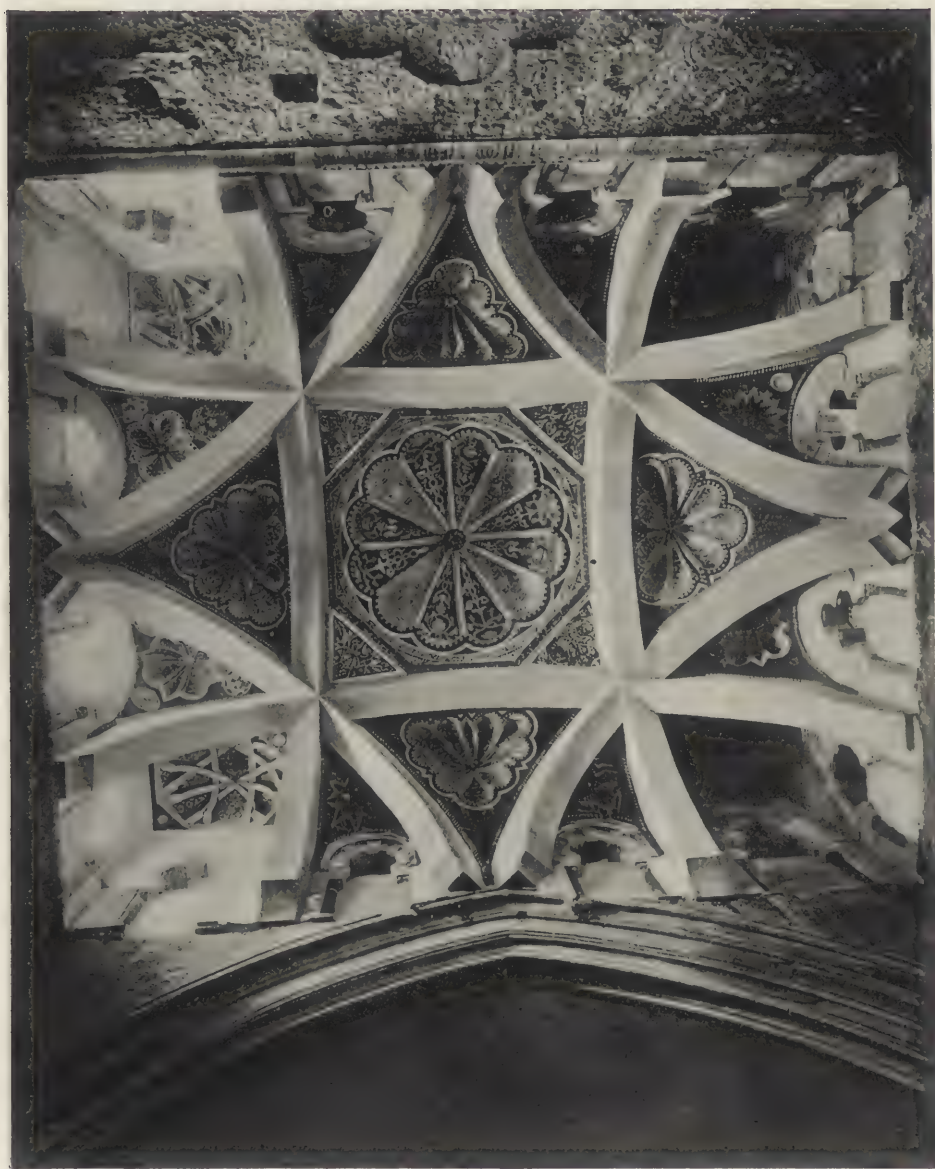
The Mosque of Cordova is a parallelogram, 294 feet east and west, with nineteen aisles, by 360 feet north and south, with thirty-three aisles. Like the mosques of Cairo and Damascus, the nineteen aisles opened on the court of Oranges, in the centre of which was the font of ablution. The roof was supported by 1,200 monolithic columns of precious stone, the fruit of conquest and presents from Nismes, Narbonne, Seville, Tarragona, Constantinople, Carthage and other Eastern cities. With such a motley array of material, varying in size and length, it became a problem how to utilize them. The outcome was that the architect chose 12 feet as the uniform height of his columns, and by dint of adding capitals of all orders and sizes and sinking many of the columns into the ground, he formed a low-roofed structure, which, carrying out the idea of the East, became the finest example in Europe of a true temple of Islam.

The ceiling was wood, richly carved and decorated, and formed into a species of groinings by wooden ribs, and the extreme height was 40 feet. Over each row of columns is a tier of open Moorish arches, and still above this a secondary tier. In order to fill more completely the space of the upper tiers, an interlacing arch was added, the spring of which came down upon the keystone of the arch below. These arches were of brick in huge voussoirs covered with stucco of an intricate de-



THE CENTRAL NAVE OF THE MOSQUE, CORDOVA.

Date, A. D. 961-967.



CEILING OF THE MOSQUE, CORDOVA.



THE SANCTUARY OF THE MOSQUE, CORDOVA.

Date, A. D. 961-967.

sign of arabesques. Much of this delicate work remains and may be seen to advantage in the central nave, so called.

Observe now the result of this ruse. Although the proportion of the design of the column cap is but 12 feet, the full height of the interior in effect is 40 feet. But even this height, when we take into account the extreme size of the place, gives the impression of simply a forest of rich columns. Contrast this with the lofty and severe spirit of a Gothic edifice, and the difference marks one of the characteristics of Moorish art.

On the north wall of the Mosque is the Mihrab or sanctuary, a recessed alcove roofed over with a single block of pure white marble, the entrance arch being faced with one of the most exquisite examples of decorative Byzantine art in gold and lapis lazuli mosaic. It was here that the sacred Koran was kept, and it was towards this spot that every true son of Islam turned his eyes in devotion. In the spirit of true art it may be said that the decorative work of the Mosque is far superior to that of the Alhambra; as far superior indeed as marble and mosaic is superior to decorated stucco.

I have spoken of the fact that originally the outer wall of the Mezquita with its facing columns was open to the Orange Court. This was following out the ancient idea, and indeed the present plan of the famous mosques of Damascus and oldest mosque of Cairo, and was intended to give light and air to the interior. Whether there was added hyphethal lighting, or, as Fergusson believes, an open arcade near the ceiling on the side is an open question. The exterior is hardly to be considered architecturally, since it is a simple massive wall surface with flame-like parapet, and square buttress towers. It was a simple study of needs, simply expressed, and as such is good art.

It is a singular fact that while Spain during this period was under Moorish domain, we find two distinct styles of art often in the same district. This is due to the fact that while the Moors held the Christians, whom they had conquered, in detestation, they still

allowed them to erect buildings in their own methods, although they never borrowed much from them in their own works. That they were lenient in this respect is admitted. And that they were highly refined is also shown in their work, and history tells that they advanced rather than retarded the country both in art and science. An example of this refinement is shown in the little Church of Christo de la Luz at Toledo, erected anterior to the Eleventh Century, a small church, but in some ways one of the most interesting in Spain. It is but 21 feet square, and the roof is supported by four large columns, over which are horse-shoe arches with piercings above the arch. The compartments thus formed are vaulted, and the vaults themselves project at their bases, forming still other horse-shoe vaults with surface ribs. But the most beautiful part of this design is the central vault, which, rising higher than the others, forms a dome almost Byzantine in character, but strictly Moorish in design. This dome is pierced with windows which throw the light down into the interior. In fact, I do not remember of there being any side windows. It must be noted in this building that the roof does not form the ceiling, and that the vaults are not constructional, but simply ornamental, being framed in wood, and covered with stucco. In this respect it differs from many of the Eastern Moorish buildings, which are built of stone, and are actually constructional in design.

A century later nearly all traces of Byzantine influence disappeared from the work of the Moors, and we find the beautiful church of Santa Maria la Blanca, also at Toledo, as a good example of its period. It was not built as a Mosque, but as a Jewish Synagogue. This statement has been questioned, but it seems highly improbable that the followers of Mohammed would have built the Church in such a form, and not facing the sacred city of Mecca; further, the locality was the old Jewish quarter of Toledo. Here is a building reasonably well preserved, and beautiful in the extreme. Marble and stone columns give place to brick construc-

tion of piers, which are large polygonal pillars covered with stucco. There is a nave and two side aisles, with eight horse-shoe arches springing from the columns. These arches are simple and massive, and the spandrils only ornamented. A noticeable feature are the

A. D., is an oblong building, 40x20, and its Christian use is at once recognized by the chancel, which is divided from the nave by a horse-shoe arch resting on engaged columns of marble and having the usual secondary horse-shoe arch above.



INTERIOR OF SANTA MARIE LA BLANCA, TOLEDO.

capitals, of later date, however, which, being of cement, show that they were not moulded on, but carved out of the solid material itself. This is interesting, since it gives a freedom to the work unattainable by the use of a model. The roof over the nave is composed of wood with tie beams laid closely together, and corbels moulded under the ends. As if to depart as far as possible from Moorish precedent also, the method of lighting was from a sort of clerestory, the filled-in arches of which are still visible.

To retrace our steps a little it is necessary to touch only on one church which is said to be the only remaining example of a Christian Church built by Christians in the Moorish style. It is the Church of Santiago de Panelva away up in Leon, and hence one of the few examples of Moorish art in the north of Spain. It was built about 950,

The builders here followed out a true vaulted roof over the nave, and yet carried up the chancel into a square lantern, with flat decorated wooden roof. At the other end of the church the entrance is through two horse-shoe arches, supported on a central column, over which is an arch similar to the chancel opening. The Moorish spirit, however, could not leave the work altogether Christian in character, so the builders introduced semi-circular apses, with dome not unlike a Mihrab, and wholly Moorish in character, and, having done this, undoubtedly felt their conscience eased for engaging in Christian church building. This fact seems to show that the work was erected under Moorish guidance, and it is probable that both Moor and Christian had united their labors to some extent at this period.

This fact is the more clearly shown

by examples of Christian Architecture that were contemporaneous with the works that we have mentioned, and show conclusively the two currents that flowed side by side. No one can doubt that Santa Maria de Naranco or San Miguel de Lino at Oviedo were built somewhere between the eighth and ninth centuries, and we find records of San Pablo and San Pedro at Barcelona which fix the date at about 900 and 980, A. D. Unfortunately I could find no photographs of these little chambers, but they are much alike and one will suffice to show the influence which guided their builders. It must be remembered that the division between Spanish and French towns at that time did not exist, that such towns as Carcassonne and even Toulouse were under Spanish influence as to art. And, further, the stream of education in art, especially of the Romanesque orders, was flowing from the east, through Italy and Provence, and naturally followed the curve of the Gulf of Lyon. Although the Spaniards called this art "*Obras de los godos*," in every sense of the word it was to them Gothic. Thus San Pablo is a cruciform church with three apses at the East and a lantern over the cross, not unlike its prototype in Tarragona. The roof is interesting as it is of wood, vaulted and forming over the surface a series of half-domes. The nave arches, supported by pillars, are also interesting, since the capitals are Romanesque in design and full of animal life. This was a noted difference from the Moorish, for the Moors used no figures of animals or life of any sort in their carving and decorations.

In looking up these old churches, so interesting because they would tend to show the type of building erected during the struggle which followed the invasion of the Moors, I know of but two more examples in the north of Spain, San Pedro and San Felin at Gerona, the former built of volcanic scoria, and the latter with a beautiful spire and massive fortress-like walls, which indeed they were, for tradition tells that the Moors attacked it, stormed it, and only captured it after a fierce struggle.

Passing on, therefore, a little over a century, we are brought to consider

some of the work of the twelfth century, so interesting in other countries, and no less so in Spain. The century opens with one of the most interesting specimens of Architecture to be found in Spain. Here we are enabled to observe how much effect size alone has on our perceptions of art, and to see how infinitely more precious is the quality of design. A grandiose cathedral of the sixteenth century, almost holds in its arms the well-preserved body of a twelfth century production, the former uninteresting because of the intrinsic beauty of the latter. I am not aware that we know the name of the architect of the old cathedral of Salamanca, but we do know that it was built through the influence of Geronimo, a warlike prelate, and we see the influence of his spirit in the massiveness of its walls, which lent to it the epithet "*Fortis Salmantina*." The date of its erection is variously stated, from 1095 to 1102 A. D. As far as the church itself is concerned, there is nothing remarkable except its simplicity. It has a nave with side aisles, transepts and three apses toward the east, the central one large and with pointed arch of the same size, as over the transept. Had the architect followed in the style of the Byzantine Church of St. Front at Perigueux which was begun 984 A. D., he would have commenced his lantern directly over the crown of his pointed cross arches, and, like St. Front, would have constructed a dark and not especially interesting feature. But this was exactly what he did not do, and therein lies the credit of beautiful design. Over the arches he ran a corbelled cornice and two stories of arcades in which are windows. Just here also great strength of design is shown, since on the first tier there is but one window to each cardinal point of the dome, while above the effect is made delicate and airy by three windows, all round-headed. The triumph of skill, however, is in the method of resisting the thrust of the superimposed load of tiled roof, which is effected by four beautiful circular pierced pinnacles, the whole forming a piece of construction that shows no defects of age, and being beautiful is a joy to every student of architecture.



THE EAST END OF THE OLD CATHEDRAL, SALAMANCA.

Date, A. D. 1102-1180.

It was this lantern which so impressed the late Mr. Richardson in his travels, and which he studied in the erection of the Trinity Church in Boston. It is interesting to note the fact that in the erection of the new cathedral the Junta of Architects agreed that the old church must remain untouched, and backed their opinion by an oath which ended, "so I swear and amen."

Zamora is similar to Salamanca, the design being nearly like it, except that the roof is a full half sphere; the interior is smaller, however, being 23 feet

dral, too, with its battlemented parapet, overhangs the wall as if to throw down the gauntlet of the church to invaders, and to proclaim it ready to fight both the world, the flesh and the devil. It was a fighting church, the very cannon-ball ornamentation on its towers even seeming to proclaim its victories, and I love to think of those old builders who in 1091 A. D. inwrought their spiritual defences with the bulwarks of the town. Since most of it, however, is of later date, we shall speak of it in another article. Go down now under



FACADE OF SAN PEDRO, AVILA.

Date, A. D. 1120.

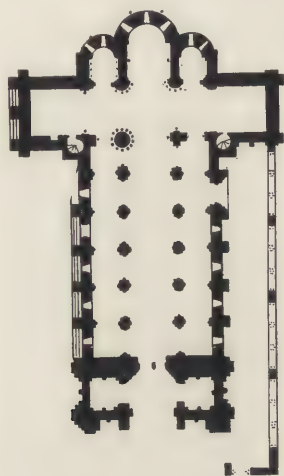
wide, with noble piers 7 feet in diameter. The date is 1174 A. D. Owing to the question as to the exact date of Salamanca and the admitted nearness of their dates, it looks as if the same mind conceived both churches.

At this point my mind wanders off to one of the first towns which I visited in Spain. A marvelously picturesque town is Avila! What an amount of interest is attached to those old walls with their round towers! The cathe-

dral, too, with its battlemented parapet, overhangs the wall as if to throw down the gauntlet of the church to invaders, and to proclaim it ready to fight both the world, the flesh and the devil. It was a fighting church, the very cannon-ball ornamentation on its towers even seeming to proclaim its victories, and I love to think of those old builders who in 1091 A. D. inwrought their spiritual defences with the bulwarks of the town. Since most of it, however, is of later date, we shall speak of it in another article. Go down now under

The plan is so beautifully simple that I cannot help showing it. The west end is massive and square set, with two buttressed towers, and a grand arched exterior porch, a singular design, but beautiful in effect. Between the massive towers is a huge arch, and

from column to column are two solid screen balustrades admitting one to the entrance. The huge Romanesque arch of the doorway moulds out in five enriched recesses, each with a pedestal and saint. Above is a simple cornice richly decorated with an open balcony.



San Vicente Avila

Possibly it is the delicacy of enrichment and the massive simplicity of this whole front that moves one, but certainly the whole conception far exceeds almost any other like entrance of its date.

On entering, the plan is a simple nave, with side aisles and transepts, and the usual three eastern apses with a simple central lantern. The side wall has simple pointed windows, and the ceiling is flat, of wood. Between the second and third piers from the cross is a western entrance, which opens upon a wide cloister of later date. This cloister has occasional piers and clustered shafts and is singularly beautiful, although suggested by San Millan, one of the best examples of pure Romanesque in Segovia.

I have said that it is noted that the Moors seldom borrowed any features from the Christian work. In this Church, however, there are several screens of a decorative effect that show that the Christians were not slow in accepting many of the beauties of Moorish art. The arches near the great porch are thus filled with a trellis-

work which reminds one of the East. They are simply a diaper of squares, the edge of which are cut in pattern, and not unlike the *meshrebeyeh* of Eastern cities, and thus showing the Moorish influence.

On the whole, this church, designed undoubtedly by the school of late Romanesque architects, is one of the most interesting and noble of its class. It is worthy of more than passing interest, and, as Mr. Street says, gives such an insight into the careful study of those old builders that he was somewhat disheartened. "For here," says he, "in the twelfth century we find men executing work which, both in design and execution, is so unreasonably in advance of anything that we ever see done now that it seems almost vain to hope for a revival of the old spirit in our own days; vain it might be in any age to hope for better work, but more than vain in this day if the flimsy conceit and imprudent self-assertion which characterize so much modern (so called) Gothic is still to be tolerated! For evil as has been the influence of the paralysis of art which affected England in the last century it often seems to one that the influence of thoughtless complaisance with what is popular, without the least study, the least art or the least love for their work on the part of some of the architects who pretend to design Gothic buildings at the present day may, without one knowing it, land us in a worse result even than that which our immediate ancestors arrived at."

As a matter of fact, the exterior of Avila, is full as interesting as the interior, and singularly enough as one walks around the walls he finds several buildings of the Romanesque order with pointed vaulting that must have been built after the walls of the town were erected. San Esteban and San Andres, San Segundo and San Pedro show how much of interest there is in this our northern Spanish town. Since I have a photograph of the latter, one will suffice. It has a nave, aisles and very deep transepts, the usual triple apse and lantern. All the columns are large, the windows small and the detail of extremely massive Romanesque spirit.



SANTA VERA CRUZ, SEGOVIA.

Date, A. D. 1150.

The most interesting feature is the western front, with a glorious circular window and wheel tracery. The entrance has a richly moulded archivolt with dog-teeth enrichment, and the huge buttresses at either side give wonderful strength to the simple facade. The date of this church is 1120 A. D.

We have thus been speaking of a type of architecture in Spain during the twelfth century, in which, while the vaultings and windows are often pointed, the character of the work is undoubtedly Romanesque. Some of them, St. Vincente for instance, have a system of buttressing, but it is more of the pilaster order than the result of any defined grouping of vault trusts. Therefore they are not Gothic in principle.

In all countries and in all times there have been that class of building which have been designed and built contrary to the usual methods in vogue. To this class belongs a singular little church which is not without its beauty. It is known as the Church of Vera Cruz at Segovia and stands on a hill-side by the road, bare of any vestige of foliage. Its date is 1150 A. D. It reminds one of the Mosque of Omar at Jerusalem. I shall never forget the impression of this church on entering. There were the walls faced with marbles of beautiful colors, an aisle all

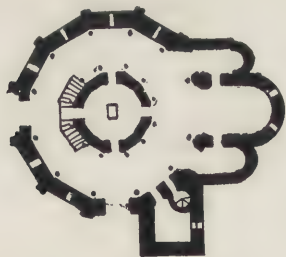
A witness grasped the chain—if he told the truth no effect followed; if he told a falsehood the link dropped off.

Our little church at Segovia, however, is before us.

Here also we have a polygonal church with a large circular headed Romanesque entrance ornamented with billet moulding and the moulding supported on engaged columns. A large square tower stands on the Southeast corner, and the Eastern angles are composed of three apses; there is also a secondary entrance to the South.

More interesting than the exterior is the interior, however, for upon entering one is confronted by a raised vault, with pointed vaulting, the walls of which hold the vaulting from the side walls. There is thus formed a central chapel raised about 20 feet above the floor level, lighted from a lantern above, with a circular interior dome. Around this, chapel it might be termed, ran a continuous aisle, with its apsidal chapels all lighted from round-headed windows near the cornice. Exactly what the raised chapel was intended for, I do not know; were it not for an altar in the centre one might conclude that it was a raised choir, but the chapel idea is generally conceded. This little church is used now by the peasants outside the city and not the least touching point is an old stone cross, just outside the door, at which kneel the faithful, and before whose weather-beaten stones one instinctively raises his hat. The storms of many centuries have passed over the little church with its cross, and still left it to do its work of sanctification for the poor of Segovia.

I cannot pass two other churches of Segovia which mark a peculiarity of this era. They are San Martin and San Esteban and were built about 1180 to 1210 A. D. The mark of peculiarity of which I speak are the external cloisters, which seem to be confined to this locality. They are evidently a means to prevent the excessive heat from penetrating the interior and are exceedingly beautiful. If we observe those connected with San Esteban, we see they are double clustered shafts with round arch and dog-teeth ornamentation telling of Romanesque influ-



PLAN OF CHURCH, VERA CRUZ.

around, and in the very centre a huge rock projecting six feet high above the floor, the actual Dome of the Rock on which the Temple of Jerusalem originally stood. The Moslem legend is interesting. At this very spot was formerly suspended a chain from heaven, the test of truthful evidence.



ence, while some of the openings in the tower are pointed. This tower, by the way, is worth reproduction. As I ap-

proached the church, a little fellow endeavored to stand on his head on top of an old fountain, but when he saw we were sketching, he left his perch and watched us intently. The tower has a lower story, massive and strong in design, with five stories above, each with double openings, the first tier pointed, the second round arch, the third and fourth pointed and heavily moulded with columns, and the fifth composed of three openings, with round arches and round pierced windows. Above is an interesting roof story with small dormers.

In all this we see the gradual mixture of the Romanesque influence with the pointed.

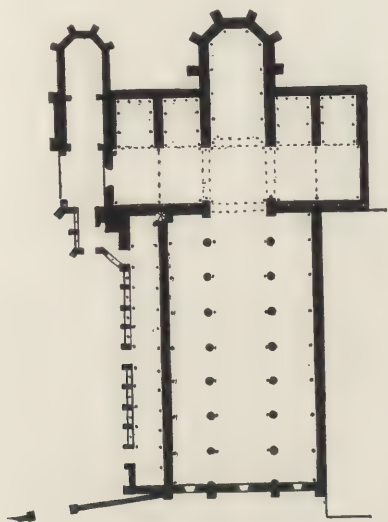
Possibly the best-known example of a convent building of this era is the Convento de las Huelgas at Burgos, which was commenced in 1180 by Alonso VIII, who, having used a good



THE CONVENT (DE LAS HUELGAS), BURGOS.

Date, A. D. 1187.

part of his life in the deviltries common to the lordly race, thought to expiate his sins by its erection and maintenance. As if to guard against any chance of the visitor being led astray by the wiles of a stray shot from the mischievous eyes of the nuns who still inhabit the nunnery, there is an iron grating between the nave and the cross transepts. A study of the plan shows that there is the usual nave, rich tran-



Las Huelgas Burgos.

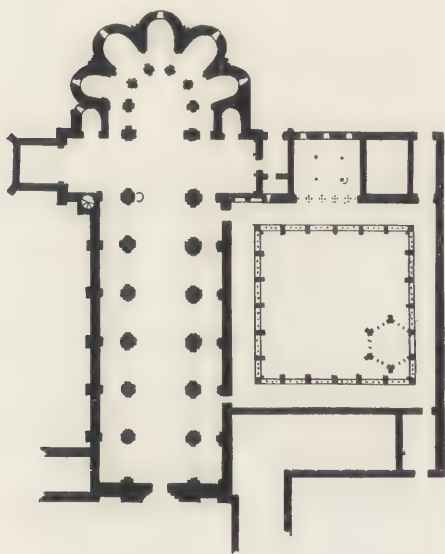
septs, square lantern and very deep central apse. Besides this in each transept are two square apsidal chapels. To the north is a porch with a beautiful wheel window and, of later date, the entrance. Beside the entrance is a high square tower with buttresses and pointed openings, above which is a balcony and beautiful open iron cage bell-supports. To the east are the high walls of the convent buildings with their cloisters to the west. The cloisters on the north are partly built in, but they show the original heavy buttress work the grained ceiling and the filled-in openings of pointed arch-work on their slender shafts. This cloister is of later date, however, as is shown by the fact of being built up against the window openings of the aisles. Still above are the

clerestory windows which are round-headed.

To those interested in the study of vaulting this church is full of interest. The vaults of the lantern, apses, transepts and one or two of the nave bays are different, and seem to show the influence of French study. Indeed, this is not singular, since nothing is more natural than that the Queen of Alfonso should be led to introduce the architect who had erected buildings for her father in Angevine. In my mind this fact is established by its very strength of character, which is far more scientific than the class of vaulting found in those examples which are known to have been erected under Spanish influence only. To me the French have always stood as the foremost builders of pointed work in every respect, and this idea seems to be borne out by all the noted examples of Gothic architecture in France or elsewhere. It is a noticeable fact that this class of building also does not extend far south, nearly all the best examples being near Burgos, Avila and Valladolid, and we are led to the conclusion, therefore, that they are due to the influences of prelates and priests, who brought with them the traditions and ideas of their French education. This fact is more clearly shown in several other notable structures all of about the same era. Tarragona, 1131; Lerida, 1203; Tudila, 1135, and Veruela, 1146. Of these, since the latter is an abbey church and of that class of ecclesiastical structures which added the picturesque features of a fortress as well as a home and a church, I shall speak more fully.

It is one of those beautiful old remains which the traveler loves to visit, away from the commonplace of a town, and nestling itself amongst the foliage of the country; a group of roofs and towers; sturdy walls with battlemented tops, from which a little town springs; the whole surrounded by shrubbery—beautifully picturesque. Away back in 1146 it was commenced, and in 1171 twelve monks crossed the Pyrenees in the dead of winter and took up their abode within its walls; they were Cistercian monks, and under the direction of Bernard, an Abbot of

Scala Dei. One enters the outer walls through a round arch, and finds himself in a court, and before him is a tower, square and massive, and surmounted by an octagonal spire of later date. A thirteenth century archway gives entrance to the inner court, and before him is the old abbey church. The west front has a deeply recessed round archway, over which is a stone inscribed X P and A Ω; above, as if to give a touch of delicacy to the exterior, is an arcade on slender columns. The front recedes, and forms a gable whose rake was once arcaded, and the nave and aisles each have a circular window in the front. The interior is simple and massive, with pointed arches, and piers which are large and effective. The point that



Veruela Abbey

one notes in the interior is the apse which is large, and has an aisle around it with five apsidal chapels; on each side of the large apse is also an additional chapel, making seven in all, the two latter opening from the transepts. The ceiling is groined in stone, and the entrance of the chapter house forms one of the most beautiful effects of any early church in Spain. It enters from the fourteenth century cloister through

secondary round arched openings, five in number, each supported by the singular plan of five slender shafts, and the interior is a groined ceiling supported by four single shafts. It is almost Moorish in plan. The cloister itself also is beautiful, the traceried openings being filled with alabaster panels, and the buttressheads capped with crocketed gables. Over the cloister is a second arcade in the style of the Renaissance, which is a detriment to the design.

Here, then, we find, on the whole, a very marked advance in planning over the earlier churches of which we have been speaking, and it leads on and on towards the grand cathedrals of later date, of which we shall speak in another article.

Leaving for a time ecclesiastical structures of this era, it is well to consider another branch of early Moorish art, which has given to Spain so much of interest. It will show that those old builders understood well the use of that good old compound of mother earth and water, which we call brick, and which has occupied the thoughts and hands of all mankind from the time of the Egyptians. Indeed, the Moors excelled in this class of work, as is shown by the large number of beautiful old towers that still exist, and which gives to Spain so much of its picturesque interest. We can speak of but one or two of them. At Saragossa is a beautiful example of this work in the tower of St. Paul, erected in 1259. It is an octagon in which great strength of design is shown by a high plain base, and the upper work in diaper. Each face of the octagon has a Moorish arch whose top is pointed, with double openings within the large arch, and above is a large rectangular panel of inlay, and still above a gallery, from which starts a smaller octagonal tower with a pointed roof, the whole filled in with glazed tiles of brilliant colors, which reveal the Tartan art to perfection. The influence of this tower is seen by the fact that when a later tower was to be erected the architect was surely influenced by it, for, in the Torre Nueva, we are treated to a finer and loftier one, of which I am enabled



THE LEANING TOWER, SARAGOSSA.

to give a view. So high was it that a small settlement caused it to lean and necessitated a curious mass of brick buttresses at the base. This prevented its fall, but it is fully ten feet out of the perpendicular, a deformity for which the townsmen thank the Virgin, as it has made the town famous like Piza, and thus brings a few more visitors to enrich their coffers.

A study into the effects gained by the use of brick shows that while some of the work was either moulded or cut, the beauty was effected by the use of simple and massive forms, and a diaper work in which the bricks were either projected from the face or let into the wall. The bright Spanish sunlight not only brought out the design, but cast deep shadows which were sharp cut and well defined. The Christian builders caught the spirit of this art at once,

and thus many works are found, which although built in the Moorish era, are in reality of Christian origin.

In closing it may be well to speak of the Moorish tower best known to us at the present day, the Giralda tower at Seville. It was erected by Abu-Jusuf-Yakub in 1196, and is topped by a wind vane 14 feet high which turned (*que gira*) in its socket, and hence gave the name of the tower. It forms the prominent feature of the city, and in its purity was a plain shaft 185 feet high, by 50 feet square, with beautifully designed balconies and the side walls encrusted with panels of *ajaracas* diaper work in brick, each of a different design. The upper portion in rich open work, which is 100 feet higher, was added by Fernando Ruiz in 1568, but is of inferior design when taken in detail. On the whole, however, the distant effect of



LA GIRALDA, SEVILLE.

the tower is enhanced by the addition and is most enchanting. Seen at day-break the pale pink of the bricks brings out the panel designs which are strengthened as the sun rises; at even-tide when the sun is falling into the horizon it looks luminous with the rosy light of the after-glow; an hour later it pierces the sky, a silhouette, which starting with massive strength at its base runs up and up until it disappears in a point.

Charles A. Rich.





NEW YORK LIFE INSURANCE COMPANY'S BUILDING.

Chicago, Ill.

Jenney & Mundie, Architects.



New York City.

THE NEW CLEARING HOUSE.

R. W. Gibson, Architect.



THE ÉCOLE DES BEAUX-ARTS.

Third Paper.

THERE is little difficulty in accounting for the supremacy of the *École* over all other schools of art. To explain it one has simply to recount her methods of instruction.

First.—Most of the poor material is weeded out by the entrance examinations.

Second. — Advancement is determined not by time, but by results; the student's progress being gauged not by the number of years he has studied, but by what he has accomplished. Each one is left to walk by himself. The bright are not yoked to the stupid. The student passes from one grade to another not at stated times, nor in company with others, but upon the receipt of certain honors, singly, by himself, and prizes are offered to those who lead.

Third.—All the instruction is based on a system of competition, and the most intense rivalry exists not only between the pupils, but between the various *ateliers* and the *Patrons*. Every man knows just where he stands with respect to every other man, for the rolls are constantly revised and the call *en loge* arranged in the order of standing.

Fourth.—Architecture, and the same is true of her daughter arts, painting

and sculpture, is taught, not as is the case so often elsewhere, by men who have not achieved any great success in their profession, and who undertake to teach others what they have not been able to accomplish themselves; but by the greatest masters of the day, practicing architects, men of the highest distinction and ability; men who know themselves what they teach; men who are enthusiastically admired by their pupils; whose word carries weight. That such men should be willing to give up so considerable portion of their time to the cause of education, speaks volumes for the French character, and throws a vivid light upon the high state of civilization in that country.

Fifth.—The student himself is not in such a hurry to make money that he cannot afford the necessary time for an education. Nor are the conditions such as would permit of such a course. In France something more by way of qualification is required of an Architect than his simple assertion that he is one. A young man there, after spending a few months or years in an Architect's office, is not permitted to erect monstrosities, eye-sores as long as they stand, and a menace to public taste. In Paris few structures can be found which do not bear upon them unmis-

takable evidence of having been designed by educated architects.

Sixth.—Encouragement to effort is afforded on a more liberal scale than elsewhere. Besides numerous endowed prizes which are competed for annually and which are arranged in such a way that in contesting for them one may win honors and advancement in the school, even if not the prize itself, there is the *Grand Prix de Rome*, a prize foundation, which for dazzling attractiveness can only be compared to the prizes of the ancient Grecians; a prize which means to the winner not only great honor and advantages impossible to gain otherwise, but practically an assured future in life.

Such are the salient features which go to make the French school what it is, and every one is a surprise to the American.

Now, when to such methods are coupled the conditions that the student lives in an atmosphere of art, that he sees everywhere about him splendid examples of architecture, that he is constantly brought in contact with the greatest works of art in the other branches, that from the start many of his everyday comrades are men who have had years of training under the greatest masters, can one wonder at the results?

To compete every two months for several years under such men and in the midst of such surroundings as one finds at the French school, is to learn architecture under the best auspices.

It is often said that the teaching of the school is not of a practical kind; that the *projets* are for buildings such as one seldom encounters in real practice; that when the student receives his diploma after years of study he is entirely ignorant of the most commonplace duties before him, but the results do not justify the criticism.

The ordinary practical affairs of everyday practice can be quickly picked up, but what is taught at the school can be learned so well in no other way and in no other place. The principles taught there can be applied as well to the cottage as to the palace, for they are the principles of good taste. One is taught a knowledge of

the resources of the art, and mastery of its technique.

Her atmosphere is not congenial to the growth of sentimentalism, one hears little about the picturesque. The teachings of Ruskin and Turner are foreign to her methods. Her standards of art are of a higher type. Art is regarded as the highest effort of the intellect of man, the measure of his superiority over all created matter, and the human figure, the most beautiful work of the Almighty, is accepted as her canon and guide.

The evidence of the intellect of man in architectural design lies in the symmetry and logical disposition of the parts as shown principally upon the plan.

M. Charles Blanc reminds us that man alone of created beings can trace a geometrical figure.

The lesson of the human form as applied to such design is perfect symmetry to the right and left of the central axis and diversity from head to foot. On this principle has every masterpiece of architecture from the earliest record of man been conceived.

Success or failure at the school so far as the architect is concerned depends chiefly upon his ability to seize the *parti*.

This word *parti*, as used at the school, means the logical solution of the problem, and as every true architect must have two natures, the practical and the artistic, the *parti* must be the logical solution of the problem from his dual standpoint as constructor and artist.

The ability to grasp the right *parti* is a gift of nature, it can be acquired only to a limited degree. It is the characteristic of genius in architecture. Without this gift no man can ever hope to become a great architect.

A certain *parti* for the *projet* is taken by every student *en loge* during the twelve hours allowed for the sketch, but the *parti* as it is called, that is the *parti* par excellence or a solution which is logically right from the artistic and practical standpoint, is seldom taken except by the gifted or by the learned. If by the latter it conforms to the traditions of the school and is awarded a mention. If by the former

it shows originality and thought and the maker receives a medal or a prize, as the case may be. For originality which conforms to the laws of good taste, more than anything else, receives encouragement at the school.

As the *parti* is most clearly shown on the plan, the plan becomes the chief consideration, and upon it is lavished by far the greatest study and care.

For the same reason the plan is the chief consideration of the jury; it is scarcely an exaggeration to say that in making awards the plan counts for nine points out of ten.

Where so much attention is paid to the *parti*, architecture cannot be very bad.

The consideration of the *parti* militates against many things of which we in this country are fond. Where the *parti* is considered affectations disappear, for the design must conform to the dictates of reason. The same consideration makes it necessary to comply with the laws of health and convenience in structures to be occupied by man. Where the *parti* is considered people do not build miles upon miles of tenements lighted only at the front and rear, having slits—courts, so called, four feet wide, on which open all bedrooms, a menace alike to the health and morals of the community—buildings often occupied by twenty families on land barely sufficient for two or three. Rich men do not build country chateaux against the street lines of cities, nor do communities claiming to be civilized and refined make choice of barbarous styles of architecture, like the Romanesque, for instance, in which to express their aspirations.

To say nothing of the artistic considerations, the study of the *parti* saves to France millions upon millions yearly, for careless planning is one of the most expensive pursuits a nation can engage in and such planning is seldom found in France. The room thus saved is devoted to light and air. Paris is perhaps more densely populated than New York, but the buildings are properly lighted.

In Paris the *parti* of the city, too, is considered. One does not see there buildings of ten, twelve and even

twenty stories rearing themselves, monuments alike, to the greed of the land owner and the folly of the community which permits such blemishes on the beauty of the town.

The *parti* is always dictated largely by common sense; it wars against ignorance, vulgarity, waste and ugliness in architecture. Its characteristics are fitness, beauty, convenience, economy and reason.

Because we do not consider the *parti* we were surprised that the French did not admire the buildings of the late Chicago Exhibition; viewed from their standpoint in respect to the *parti*, they were a gigantic failure. In the opinion of France, America is the champion of progress. America is modern, America is free. Judge, then, of her surprise to find at the exhibition, which was to show to the world her progress and civilization, an array of buildings evidently inspired and often slavishly copied from French school drawings of ten, fifteen and twenty years ago. Buildings, too, which were precisely what they pretended not to be; illustrating nothing new in building and nothing new in art.

Having made the sketch and taken his *parti*, the student's duties henceforth, so far as the *projet* is concerned, lie at the *atelier* and with his *patron*. The system is a simple one. He goes to school, lays out his work, then takes it home to the *atelier* and completes it. Always providing, however, the *patron* consents. If the *parti* is too bad the *patron* will forbid his rendering or else advise him to boldly depart from the sketch and be placed *hors de concours*. On the theory that as he must lose in any case, it is better to do so with honor than ignominiously.

The relation between the *patron* and the pupil is a most intimate one. The very fact of the student's seeking admission to the *atelier* is an act of homage to the master, an assurance of sympathy and admiration on the part of the applicant. The *patron* takes an almost paternal interest in his pupils, and they on their part regard him with feelings of unbounded admiration. Their interests are the same, for the rivalry between the *ateliers* is not confined to the students alone. So close is the re-

lationship between the school and the profession that a man's reputation, at least among his brother architects, depends largely upon the work of his pupils.

To the pupil the *patron's* door always stands open. No matter whom else may be denied admission, the pupil, be he never so poor, is sure of a cordial reception. On such occasions the *patron's* manner is most charming, but at the *atelier* small time is lost on ceremony. At his stated visits he passes from student to student without word or sign of recognition. He examines the work and expresses his opinion in words impossible to misunderstand. Praise is sparingly used and seldom goes beyond the expression *pas mal*. Upon occasions he indulges in ridicule and when the case requires, words of biting sarcasm bring the blood to one's face.

The *patrons* of all the great *ateliers* are members of the Academy of Fine Arts, and as such serve on the juries of the school. At the judgment, the *patron* is always on hand as well to defend the work of his pupils as to see that other *ateliers* do not carry off more than their legitimate share of honors.

I have had no personal experience with the *patrons* of other *ateliers*, but of Monsieur Blondel I can give an account.

He is a man about forty years old, handsome, of fine physique and dignified bearing; he has a keen blue eye, which meets yours squarely. There is about him an air of manly decision well calculated to inspire confidence and the evident and kindly interest he takes in those of his pupils who are in earnest, soon wins for him their affectionate regard.

Wonderfully gifted by nature, he has besides at his command the resources of the most superb education in architecture which the Government of France can give. Moreover, he is a born instructor. He sees everything, forgets nothing, and decides with a precision and justness which excites the admiration of his pupils. He is as much interested in their work as they are themselves. Or at least he has to a remarkable degree the faculty of inspiring them with that belief. When he examines a design his eye takes in

everything. No moulding so fine that he does not regard its contour, no *point de pochet* so small as to escape his notice. He is alike master of the noblest conceptions and the most refined detail.

His visits are the chief events of ordinary life at the *atelier*. As he enters a hush falls on the place which is not broken until his departure. As he approaches each student in turn, the latter rises deferentially and stands aside while the *patron* seats himself on a *tabouret*, and looks over the work.

At first I find these visits somewhat trying, for his criticisms are not complimentary. "Young man," he says, "this all looks old. I have seen that door in Verona, that window in Florence, that cornice in Rome. This is a compilation, not architecture but archæology. You are here to learn architecture, the noblest of the fine arts. It is not by compiling or copying even the greatest works of others that you can hope to succeed, but by learning to appreciate, and to apply the principles that guided the designers." Monsieur Blondel is severe, he does not realize that I came from a place where it is considered highly respectable and eminently proper not only to steal parts of a design, but to reproduce European buildings entire, and palm them off as one's own.

He passes to another *nouveau*. This young man has been working for several days, has encountered many difficulties and is anxiously awaiting his criticism; he gets it, but not in the way he expects. The *patron* glances at his work but does not deign to seat himself. He says, "You do not know enough to draw an axis"; then passes on. The lesson is short but not likely to be forgotten. The student has learned one of the fundamental laws of architectural design. Next time he will begin his work with the principal line.

How many practicing architects here and in England need to be taught the same lesson.

The next student has been *en loge* and shows him his sketch.

"What is that?" he says, "a church?"

"No, monsieur, a theatre."

"Oh! it's a theatre. Have you your mention in descriptive geometry?"

"No, monsieur."

"Devote your attention to that during the next two months."

In the *atelier* there are many strong men, members of the first class, logists and some who have already received their diploma. From these one learns scarcely less than from the patron himself, for they are ever ready to help and advise. They have spent years under the patron's eye and know his methods. It is interesting to see with what respect these men regard the master. His judgment is their final appeal. If they are masters of technique, he is past grandmaster. No man can do a thing so well but that he is ready to admit the patron can do it better. From the original conception to the finishing stroke of the *rendu*, the patron stands unrivaled.

Among the members of the *atelier* there is an intense *esprit de corps*, and a feeling of *camaraderie*. All work for a common end, the glory of the *atelier*.

If the etiquette of the *atelier* calls for small ceremony on the part of the patron, such is not the case among the students themselves. Each one as he enters is expected to go the rounds, shake hands with everybody, and inquire after his health and well being; an operation which at first I find somewhat difficult and expensive.

For instance, I enter and shake hands with the first man I meet.

"*Bon jour Flac comment va tu mon vieux.*"

"*Tres bien, merci,*" I answer, "*et vous.*"

"*Cinq sous d'amende pour Flac,*" shouts my friend, and the *sous massier* who has charge of the fine list writes five cents opposite my name. For in the *atelier* one must *tu-toyer*. Two or three days after I have entered I am fined five cents for hanging my hat on a certain peg sacred to the use of the patron. The enormity of the crime is explained to me by the *massier* himself, and I am warned that a second offence will meet with double penalty.

My own experience leads me to the belief that architects work harder than most other people, and I know that such is the case at the school. I have been at the *atelier* early and I have been there late; I have been there

Sundays, Christmas and other holidays, but I have never been there when some one was not at work. Not that the student's work is continuous, but when he does work he works.

As the first and second-class *projets* alternate, there are generally at the *atelier* men of leisure and men *en charette*. As the *atelier* is a pleasant place where one may always be amused, those who are not busy regard it as a sort of club and make it their lounging place. But their good nature seldom allows them to remain idle long. For the men who are rendering are always in need of help. One who is not busy himself, may be pretty sure of being asked to nigger for another. A man who works for another is called his nigger, and the one he works for becomes his patron.

Etiquette requires of a man who is a patron, to ask his niggers what they will have to eat at lunch time, which at the *atelier* is at four o'clock, and the nigger is expected to reply *petit pain*, which costs one cent. The patron often presses him to take a stick of chocolate in addition, which costs another.

Even these prices are sometimes heavy burdens for the students, many of whom are frightfully poor. When a boy in a village shows any talent for art he is often sent to Paris to study at the expense of the commune. There are many such at the school living on the princely allowance of 50 francs (\$10) a month.

Any description of the school would be most incomplete without some account of the *Grand Prix de Rome*.

The competition for this prize is the chief event of the school year, and to win it is the dream of every French student. The prize was founded by Louis XIV.

The Government owns the beautiful Villa Medici on the Pincian Hill at Rome, and every year it sends there from among the students of France one architect, one painter, one sculptor and one musician, and every third year one engraver. These young men are selected by competition and each is supposed to be the most promising in his respective profession.

They remain five years, and can stay in Rome or travel as they see fit. For their personal expenses they are allowed a salary. During their stay they receive every advantage which the French nation can give to perfect them in their several callings, and each year they send back to Paris samples of their work. When they return they receive government patronage. To a great extent their reputation is made and their future in life assured.

The prize is open to all Frenchmen under the age of thirty, but no man can hope to win it who has not had long training at the school. The knowledge of technique alone necessary to the handling such problems as are given requires years of training of a kind only to be had at the *École*.

The award in architecture is made after a series of three competitions conducted on the weeding-out principle. The first, open to all comers, who comply with the conditions of age and nationality, is generally participated in by several hundred. The programme calls for a somewhat simple problem shown by a sketch to be completed *en loge* in twelve hours. From these the jury selects forty which are the best, and to the makers are given the second programme, which is for a building of more importance, the design to be made in one session of twenty-four hours *en loge*. The ten who acquit

themselves best at this trial are allowed to undertake the final problem.

To arrive even at this stage is considered a high honor, and these ten men are known ever after as logists.

The final programme always calls for a building of the most magnificent proportions and the drawings are often as large as the side of a small house. For the sketch a single session of forty-eight hours is allowed *en loge*, during which time the contestants are locked in and are allowed to communicate with no one except the guardian who gives them their food. If they sleep, they do it as best they can on the drawing boards or on the floor. For the finished drawings three months are allowed, the work being done *en loge*. No books or documents can be used, but they are allowed the advice of their patrons. The sketch of each man is hung up in his *loge*, for reference, covered with a sheet of tracing paper, sealed with the seal of the school. Like the ordinary *projets*, the *parti* must be adhered to, but changes in proportion and detail may be made. To the winner all sorts of honors are accorded by his brother students, including a triumphal procession and banquet. His silhouette in the *atelier* is decorated with laurel and palms, and his name becomes one of the chief trophies of the place, and a title of distinction to the *atelier*.

Ernest Flagg.





WINDOWS IN CAIRO.



ARCHITECTS' HOUSES.

Part IV.



HAVING built our house we proceed to decorate it. There was a time when decoration of ordinary houses was unknown.

Public buildings or palaces might be decorated, dwellings of people in general were not. Fresco or whitewash, nothing between.

It is not to be denied that the very bareness of a rough room has its charm which is apt to be lost by deliberate adornment. Who does not know the fascination of the country-house garret, with its sloping rafters ending in mysterious, dark, triangular nooks and its pleasant, garretty smell of dry pine? Who does not feel the romantic spell of the country barn, with its rough-hewn ties and braces and the sawed-off beam ends of the half story over the horse stalls, above which the hay is stowed, forming a rustic clerestory to

the central nave where the high hay loads drive into the great doors?

Even in the cellar of either town or country house there is a pleasure in the proximity of the stone and brick that is not found in more sophisticated surroundings. The charm of contact with the very construction itself is indescribable, and akin to the indescribable charm of contact with nature itself, with the sweet earth and the moist dew and the cool darkness.

This charm the best decoration adds grace to without destroying it, as the best landscape gardening, no matter how formal the style, adds grace to the natural charm of nature, or as the best architecture, again, no matter how formal the style, intensifies the beauty of the natural surroundings by which it is itself in turn adorned, as a choragic column on the slope accentuates the heights of an acropolis.

The beauty of nature is that of the log cabin, of the primitive country house with plastered walls, brick fireplace and floor timbers of the ceiling exposed; we feel that we see the reality of the construction. All good decoration preserves this feeling of sincerity in the foundation work and places upon it the color or carving, "as a necklace upon the throat of a beautiful woman."

As to the practical work in hand of decorating the modest house that we have built we are much limited by custom, convention, prejudice—what shall we call it, this tendency to do things because they have been done.

Why should we limit ourselves to four square rooms with flat ceilings, when irregular rooms, or less monotonously regular than foursided, such as hexagon or octagon, are easily attainable.

No doubt when we build with sticks of timber or even with masonry, in the laying out and workmanship, it is cheaper to build right-angled than obliquely; yet we do afford for ourselves at times even more expensive luxuries.

Certain it is that "to live within four walls" is almost proverbial for conveying the impression of a narrow and unvaried life. Certain it is, too, that an irregular room, irregular in plan, in height, in incident, is far pleasanter than a regular one.

In French planning, even in city apartment houses, such irregularities

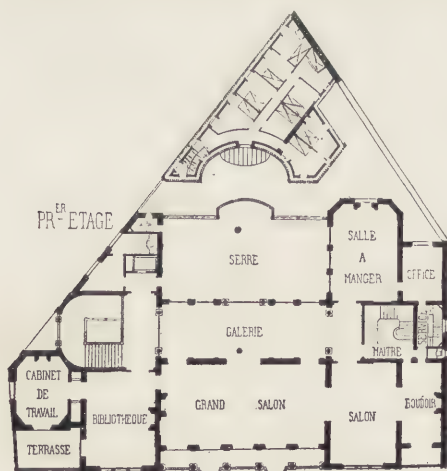
are often studied, as shown in the accompanying illustration. In the matter of height we are rarely able to do much in the way of varying the height of a room in an ordinary house that is not large enough to have any rooms double the height of others, nor complex enough to admit platforms and galleries. Still, even in ordinary houses, in the upper or attic story, pleasant rooms can be arranged with one part say ten feet high and another part only seven feet high. Even the partly sloping roof of an ordinary attic room is far more attractive in appearance and more susceptible of decorative treatment than the square-ceilinged rooms downstairs, were we not prejudiced against sloping ceilings simply because they are usually inferior rooms.

As for what may be done in more extensive buildings we may find many examples in large European houses; as for instance in our illustrations.

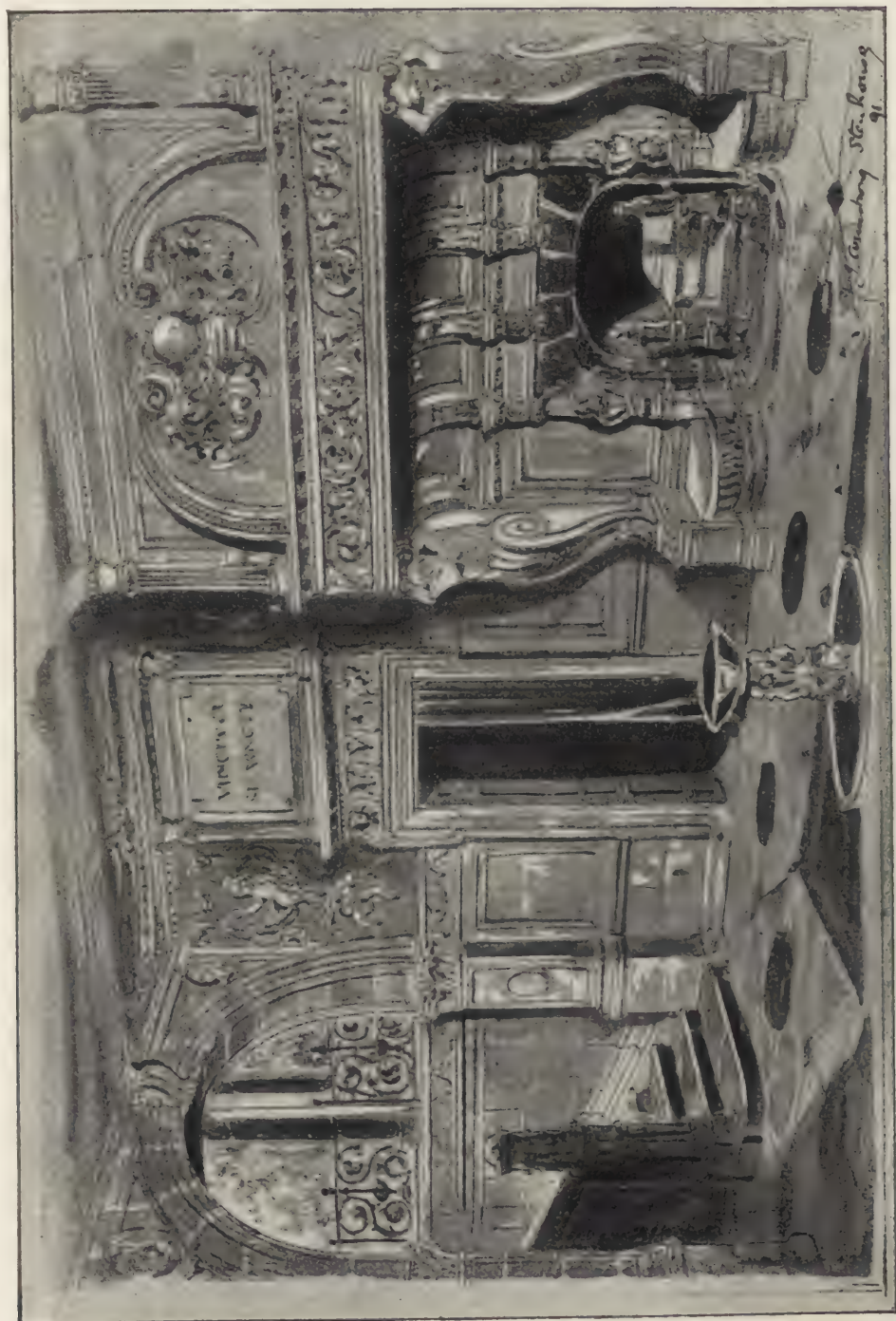
But for the most part our opportunities will be limited to four walls and flat ceiling, with perhaps a bay or window-seat or nook of some kind somewhere; far more likely are we to encounter such pleasant little relaxations now than we should have been formerly.

But taking the inside of our plain box as the simplest type there are several ways in which it may be treated. The old-fashioned way, next after the primitive bare timbers, was to white-wash the ceiling, paper the walls and mark the junction of walls and ceiling with a narrow paper border, of alleged "ornamental" design.

As a variation, and a very pleasing variation, the "æsthetic revival" of a few years ago made the paper frieze familiar; and there is hardly any simple treatment more generally available, whether done in paper or other material. The dado, which in Eastlake days had as much vogue as the frieze, is by no means as generally successful. Dados, as commonly arranged, some three feet high, are either too high or too low for an ordinary room. As a base for a triple division, of which the frieze is the capital, a portion of the wall somewhat less than the frieze is enough: as the lower part of a double division, six or seven feet is re-



Ground Plan of a French residence.



From the *London Builder*.

DESIGN FOR HALL INTERIOR.

J. Armstrong Stenhouse, Designer.



No. 3 Rue Jean-Bart, Paris.

DRAWING ROOM.

Edm. Guillaume, Architect.



AN INTERIOR IN THE HOUSE OF THE ENGLISH CONSUL, DAMASCUS, SYRIA.



Ardmore, Pa.

HALL IN RESIDENCE.

Geo. C. Mason & Son, Architects.



THE DRAWING ROOM, REDHOLM.

John Belcher, Architect.

quired. The ordinary height was at first determined by the wainscot, which naturally was carried to the height of a chairback; the intention of wainscoting being, not ornament, but to clothe the part of the wall more likely to be damaged in a material fitter to withstand rough usage. A foot and a-half or two feet for rooms from nine to ten feet high is a better proportion; and, if a wooden wainscot is wanted, is easily executed with simple mouldings, as shown in the illustration, instead of the much more costly paneling.

Often, instead of, or in addition to a frieze, a simple cove at the angle of the ceiling gives the happiest results, especially where the room is somewhat

where the rise is really very slight. A flat dome, over a theatre for instance, of only five or six feet rise for perhaps thirty or forty of span, will give an

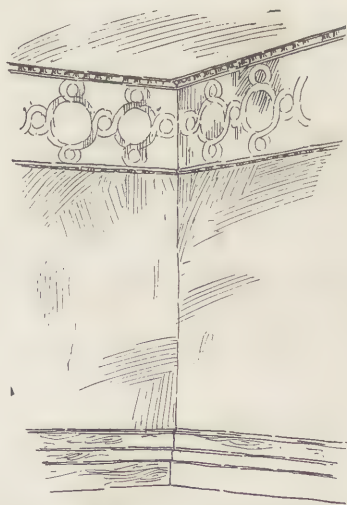


Wall treatment with cove wall in plain color, cove and ceiling lighter, with stencilled pattern.

small and a more spacious effect is wanted. It might seem at first thought, as if the opposite effect would be produced, as if the moulding at the spring of the cone, some two feet lower than it would be at the ceiling, would make the room seem more contracted rather than more spacious. In execution, however, the eye does not gauge the real height of the coved ceiling. The springing point is plain enough, but how high it goes above that is not at once evident. The effect is somewhat like that of a dome, soaring and unlimited. In more pretentious work a very satisfactory domed appearance is obtained



Double division of wall, wainscot six feet high, dark oak. Frieze and ceiling cream white, with colored chrysanthemum border.



Triple division of wall. Dado two feet high, moulded wall and ceiling in plain color. Ceiling and frieze a lighter color, with simple pattern on latter.

effect hardly distinguishable from that of a hemispherical dome.

Instead of the triple division, plinth, wall and frieze, the high dado with broad frieze placed immediately upon it is often advisable.

Especially where the dado can be done in a wainscoting of paneled wood-work is this arrangement satisfactory.

Just what division and treatment shall be adopted depends upon many circumstances. The proportions of the room, and the direction in which they ought to be corrected to the eye; the uses of the room, its aspect, the character of the occupants, not their moral character, but their social involvement

is used throughout the house. In addition to this some plaster mouldings have been formed at the top of the wall, and often nothing more is done. If anything more is attempted one of two things occurs: either the owner takes the painting and papering in hand, goes to a store, picks out the paper himself, or more frequently, herself, and has the walls papered, the ceiling and cornice colored according to



No. 4 Prince's Garden.

REAR DRAWING ROOM.

E. P. Warren, Architect.

and individual tastes, and, not least in importance, the money to be spent.

With regard to the ordinary details of interior work, there is much improvement possible and desirable.

The usual thing is to have the wood-work, the architraves of doors and windows, the base and picture mouldings and the doors themselves, made after the design furnished by the architect, and very often the same pattern

her own ideas. When she is a woman of taste, and few women are devoid of it, their practice in matching dress goods gives them a delicate discrimination of color, and their practice in dress-making is no bad training in color arrangement, the result is sometimes admirable.

But if, without interest or taste or time, the owner buys what first comes to hand, or what the salesman com-

mends most loudly, there ensue the painful failures that we sometimes see.

The other way is to hand over the house to professional decorators, who do their work with admirable skill, but at an extravagant cost. They are apt to remove the "trim" that the architect put there, not because it is not good, but because they want to have different kinds in different rooms. They put up plaster and wooden mouldings, and papier-maché scroll-work and powderings. They scheme a mirror here and a gas-bracket there. They canvas, and tapestry and paint and paper and gild, and end by laying beautiful hardwood floors everywhere.

Excellent work and excellent taste they provide, many or most of them, but the bill is apt to be high, higher usually than the ten or twenty per cent that the architect would charge, but as the charge for designing is merged in a lump sum the owner does not realize how much he is paying for skill.

It is because of the excessive amount of heterogeneous detail involved in this interior decoration that the business of a decorator has sprung up. The architect could do the work as well or better, but the amount that he must charge must be considerable or it will not pay him to undertake it. Imagine the continual alertness, after the design is settled and the drawings finished, that is required to select the fire-place tiling and have the brick-work made to fit it, and the mantel made to fit that, and the mirror, that must go into its place before the carved frame can be screwed on, is ordered, and the order filled, and the wrong size sent by a blunder

returned, and the right-sized plate sent in time; and the fire gilt mouldings that the maker expects a new stock of every day, having sold the lot that we engaged to somebody else, and the tapestry painted, and the curtains embroidered, and the ceiling leveled, and the gas fixtures designed and ordered, and fifty more minute matters, which anybody not in the business would not even understand the statement of, such as whether a moulding shall be coped or mitred, this is the business of a decorator. It is this very character of it that has made it a frequent practice to charge the designing and looking after the work together with the doing it in a lump sum, which distinguishes the decorator from the architect, for the latter designs and looks after work but does not take the contract for the execution of it.

But it is probable that if owners would pay an adequate amount, and what would seem very probably an extravagant proportionate amount, to an architect for designing and looking after the decoration, that the total cost would be much less than in any way that would obtain the same result.

For all ordinary unpretending houses of moderate cost there is nothing more generally available than wall-paper for both walls and ceilings. A few years ago admirable designs were made, in fact the designs were generally so good that it was hard to go wrong in selection.

The custom of the wall-paper trade, however, requires that new designs shall be made every year and that the printing rollers and blocks for the



"ASHCROFT."

Wm. F. Unsworth, Architect.



DOOR IN HOTEL GARIZOT, RUE ST. LOUIS EN L'ISLE, PARIS.



KNOCKER, HOTEL DE CHALONS AND DE LUXEMBOURG, PARIS.



DOOR KNOCKER.
Designed by Wm. E. Greenawalt.



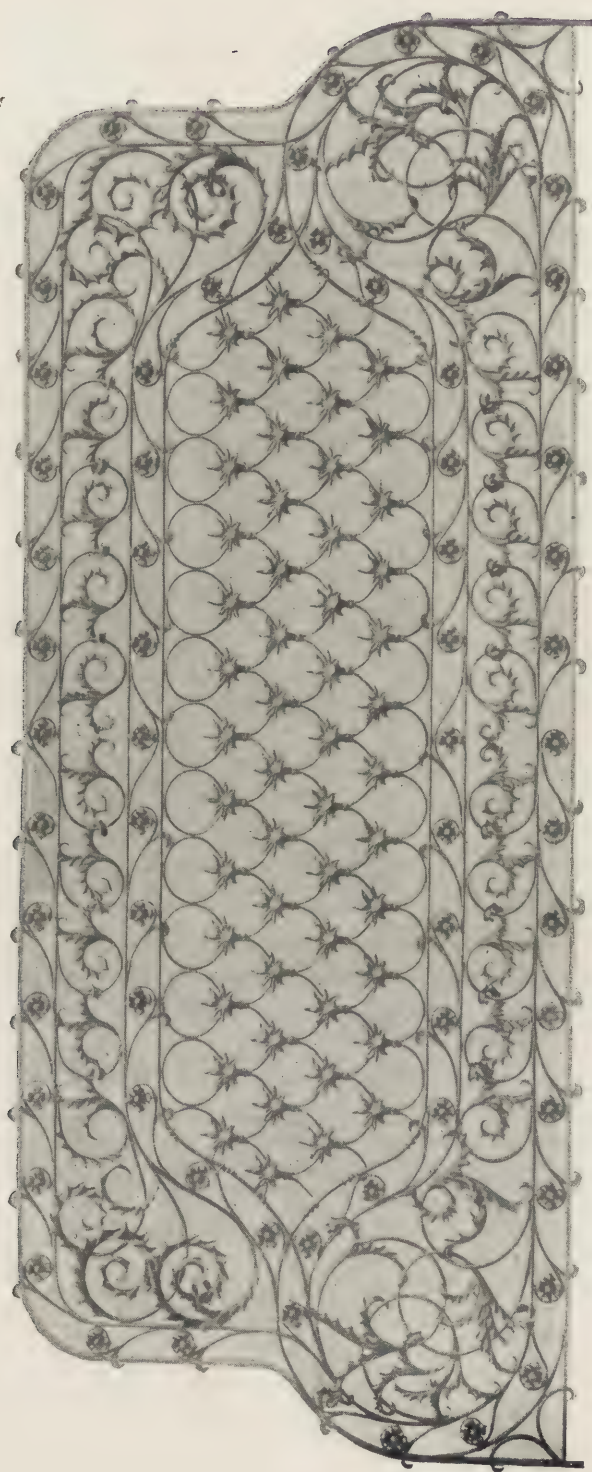
DOOR PLATE.
Executed by A. G. Neuman.



IRON BALCONY OF METROPOLITAN CLUB, NEW YORK CITY.

Designed by Jackson Architectural Iron Works,

McKim, Mead & White, Architects,



Alfred Zucker, Architect.

IRON GRILLE IN DECKER BUILDING.

Designed by Jackson Architectural Iron Works.



GOBELIN TAPESTRY IN DINING ROOM, CHATEAU DE CHANTILLY.
Made by Jean de la Croix (about A. D. 1685).

former designs shall be destroyed or discarded. The result is that wall-paper designers are under undue pressure to produce vicious novelties, and the character of wall-paper design has relapsed into the old magenta-roses-and-brown-leaves style, mere thoughtless collocation of naturalistically-drawn objects, offensive to good taste as would be a landscape painted on a floor.

design, but we are perfectly certain that after January of next year we shall never be able to get it again.

In my own house I have a paper of fairly good design, but peculiarly suited the room in which it is used, so much so that visitors usually exclaim at the excellent effect. It is disgracefully dirty from long service and must some day give way to an ordinary, ugly paper, for no amount of money can



Andirons, designed by E. A. Jackson & Bro.

In the very expensive papers better designs may be had, but not easily at any price.

It is hard to know what to do in such a state of affairs. The material that is most convenient and most beautiful if at all well designed rendered quite useless by an unnecessary relinquishment of good designs and a wanton substitution of bad. Add to this that if we succeed in getting a good design we are not only not sure of being able to replace it with more of the same

obtain paper of the same design now.

Probably the safest thing is to use only the paper of a solid color without design of any kind. These are the well-known and admirable cartridge papers, so called, but I presume before long these, too, will be unobtainable. They are somewhat more expensive to put on the wall than other papers of the same cost, as their stiffness renders it difficult to make them stick unless the walls are first papered with a thin

underneath layer of paper — lining paper they call it.

So if we do take refuge in plain color we may do well to consider paint of



Lantern, designed by Wm. H. Jackson & Co.

some kind. The simplest and cheapest is what is called kalsomine, really a water-color paint with a body of whiting mixed with water and glue and whatever colors we may choose.

This kalsomine, from an artistic point of view, is excellent. The very nature of it precludes very violent effects. You cannot get a strong vermillion, nor an emerald green, nor a dead black, nor any such atrocity in kalsomine. The abundant admixture of whiting precludes such colors.

If we yield to the nature of the material and do not attempt to more than tint the ground white we can obtain delicate shades of reds, browns, yellows and colder colors, softened by the slightly "chalky" kalsomine effect.

The great defect of kalsomine is its perishability; the slightest spot of water makes a mark that cannot be removed. For a house full of children this makes kalsomine quite out of the question, and it makes it unsuitable also in the kitchen, bath-room or anywhere else where it may encounter hard usage. Sometimes, too, there is complaint that kalsomine rubs off, but this is certainly not always the case with it. I think that there must be a deficiency of glue if it is found to rub off.

There are several alleged improvements upon kalsomine in the market, none of which have I used, but which are well spoken of; quite unaffected by water they are said to be, and are well worth a trial. One rather interesting variety I do know that has the advantage of not being patented. An excellent paint for walls can be made by mixing the powdered color with ordinary milk to a consistency suitable for applying. This gives a dead even surface like kalsomine, but the albumen and fatty constituents of the milk make the surface proof against water spotting.

Oil paint is not usually satisfactory in appearance. Differences in the hardness of the plastering are apt to cause differences in the absorption of the oil and of the texture of the paint.

The choice and disposition of coloring is undoubtedly the most important part of decoration. By good color that which is intolerable in shape may be made almost agreeable, while what is excellent may by bad coloring be quite spoiled.

So delicate and intricate, too, are color effects that nothing but the instinct of an artist's taste can give the most successful results, aided by all the training that a lifetime can hold. Yet there are some suggestions that may be not without value.

All coloring is classified by artists, and by those who are not artists, when they think about it at all, as "warm" and "cold." Even house-painters habitually use these terms. All reds and yellows, and mixed colors, browns, grays and such, in which red or yellow predominates, are called warm. Those in which blue predominates are called cold.

In a general way it is safe to put "warm" colors where you want a suggestion of heat, in rooms that have only a north light for instance, or in

streaming in; in summer cottages, and all rooms that one likes to think of as especially airy and cool.

But all this gives no inkling of the innumerable shades and mixtures of delicate tints among which we may choose. Shell pink and cardinal red and burnt sienna are all warm but so totally different that the mere grouping them as warm will help us little in selection.

Another very important practical matter is the coloring of contiguous rooms, so that the glimpses of adjoining rooms, seen through open doors, may form an agreeable combination with that of the room we are in. One artist's house I know of where the entrance hall is red, the parlor beyond yellow and beyond that the dining-room blue. Seen altogether through wide openings, the effect is charming.

Bear in mind that by red I do not mean an even brick red—perhaps a reddish gray ceiling and walls with terra-cotta colored hangings and a rug in which the inimitable Oriental reds predominate. Talking of rugs and coloring for a moment, did you ever notice how dull the best coloring is and yet how brilliant? Compare an Eastern rug with an American-made carpet and you will find the brilliancy of the separate colors of the Connecticut affair far exceeding that of the Eastern product, yet they look thin and poor, while the rich dull reds of the foreign product, the whites that are never white, the blacks that seem to be green and blue and all sorts of colors, fairly glow in their combination.

It is so too in good paintings.

The most brilliant colors seem dull if we compare them with the pure pigment just squeezed from the tube, but they stand out like jewels amid their surrounding colors.

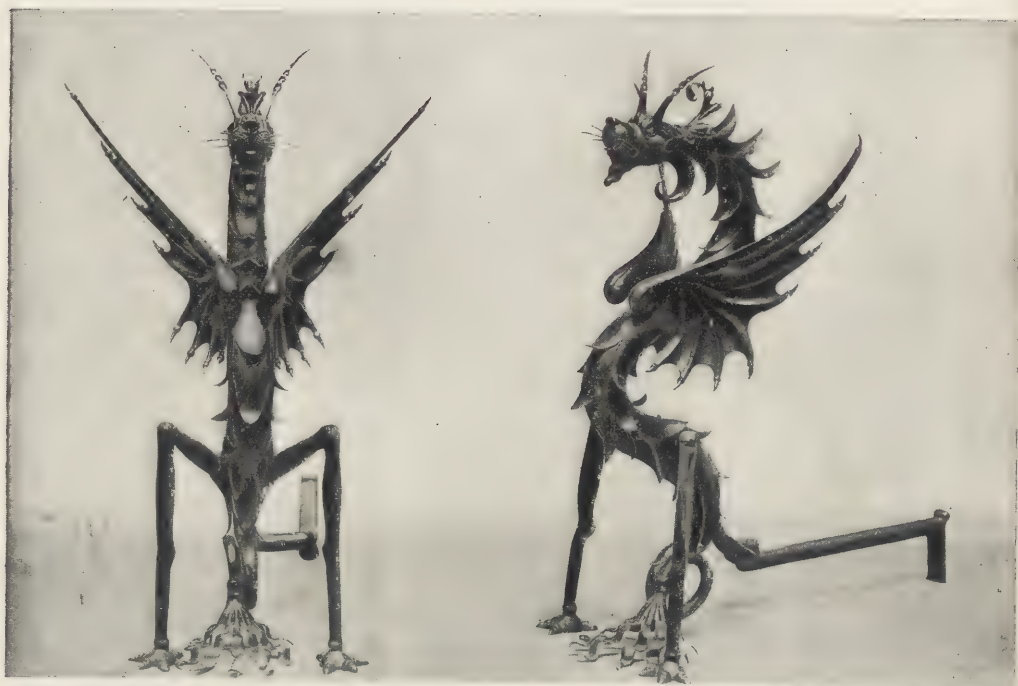
Bear this in mind in decorating your-



Fire Set, designed by E. A. Jackson & Bro.

rooms that are to be especially cosy and inviting in winter, but not used so much in summer.

Put "cold" colors on the contrary in the rooms that are well lighted with a south light and with plenty of sunlight



Andirons, designed by E. A. Jackson & Bro.

house. Abjure the colors which delight the eye in themselves, the clear blues and the bright reds, and pick out those which seem not so attractive in themselves. They will be quite bright enough on the walls and floors. In making a blue and white room, for instance, a blue-gray is quite strong enough for the broadest wall tints.

Brighter blues, but still never pure color, may be used on the mouldings and beadings of the white woodwork and they will seem all the more brilliant from the proximity of the more subdued color.

For small, simple houses where plain flat colors are to be used upon the walls, there is a scheme which is very generally satisfactory and never offensive. It is to make the walls of one tint and the frieze and ceiling a lighter tint. In the broken red that is called terra-cotta color, in brownish yellows, and almost all other subdued colors, this arrangement gives good simple effects.

The custom of the day regards hardwood for the doors and for all of the

interior woodwork as much to be preferred to painted finish. In durability no doubt oak surpasses pine, and for some purposes, as for the steps of stairs, where the unavoidable use is sure to deface paint, hardwood is most suitable. But for color effects painted woodwork for ordinary houses has an advantage over hardwood.

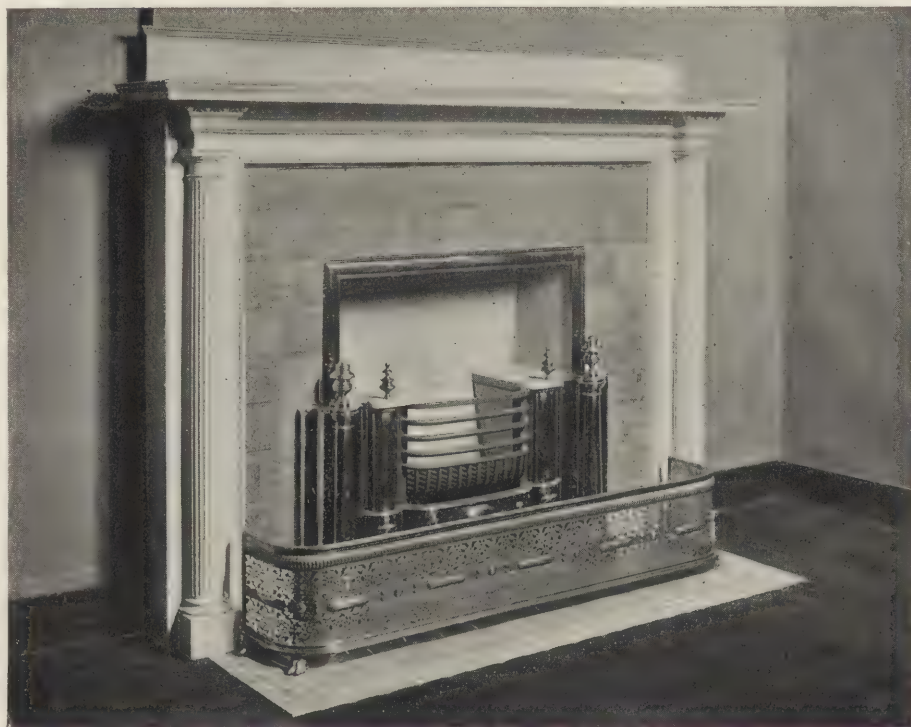
In more elaborate houses, where we can choose from a long list of hardwoods, without much regard to cost, we can find those which will suit almost any color arrangement.

A Brass
Fire Dog

The cream white of satin wood, the warmer tone of *prima vera*, the inimitable sienna color of unstained dark mahogany, the purple of amaranth wood, all are to be had if we pay for them. But in modest houses these are out of question, and I confess that the color which is attainable by painting outweighs in my opinion the more utilitarian advantages of the more costly material.

black, but a little grayish, and contrasted and at the same time harmonized well with the other color. The portières and tablecloth were made of dark blue horse blankets with black borders.

Hardly anything is more destructive of unity and beauty of design in interiors than the almost universal custom of hanging up pictures of all degrees of atrocity and in the most as-



MANTELPIECE.

Designed by William H. Jackson & Co.

The results that can be obtained with painted woodwork are often admirable.

One room I remember, the ceiling gray and white, the walls blue and white—both made of paper-hangings. The effect would have been nothing if it had not been for the woodwork, the doors and window lines with a base-board and picture moulding. These were painted a plain dead black, which being a dead black, and not a highly-polished "ebonized" black, was not too

sertive frames imaginable. These were indeed, when they came into vogue, themselves the only wall decorations, invented to partly cover and partly distract the mind from the melancholy white walls. But, used as decorations, pictures are not to be commended. They are distinctly furniture and must be used as such, each having merit and interest of its own to justify its existence.

Nothing can be more charming than perhaps unframed sketches, even though not by a master hand, standing

upon shelf or table; or well considered paintings or drawings, or heliotypes or photographs, perhaps of Venetian views or Alpine scenery, but always of something that is emotionally pleasing, in broadly designed frames, and in not too great profusion, indeed rather sparsely hung on the walls.

Next to the wall treatment in importance is the matter of hangings, door curtains, or portières as we have almost adopted the word, and window curtains. As in the case of wall papers, but not quite so completely, the excellent designs of a few years since are all but extinct. The simple striped pat-

any means. It is a linen material, a sort of linen velvet, although with a shorter pile and a thinner material altogether. Besides it has a fine cord, not more than a quarter of the width of the cord of corduroy. That it is of linen gives it a sheen almost like raw silk, and it is made in very soft, quiet colors. It wears well and makes good furniture coverings, besides being flexible enough for hangings and forming good folds. There are, too, figured reps made in colors not so vivid as the conventional ecclesiastical red rep, good for wall coverings, but not for hangings unless lined.



FRENCH DESIGN FOR ELECTROLIER.

terns, sold under the name of Turcoman curtains, or in lighter cotton materials, are no more to be had, and the other simple and good designs have vanished. In a few materials, Madras for instance, stripes can still be got; otherwise we are reduced to the floral displays of the wall papers in textile materials as well, except in the very costly kinds, and even in these the tendency is toward the renaissance of former days.

As before we take refuge in plain materials, of which one of the most generally useful is what is called velours, although it is not velvet by

For floors nobody thinks now of using the old-fashioned carpets, although when from any cause they must be used it is as impossible as ever to get an artistic design. Still it is so rarely necessary to use them, that it is hardly worth taking time to abuse them. Floors of boards, of better or worse quality, with some kind of rugs are quite generally used. What to do with the boards themselves is a question that has not yet found a perfect solution. If we varnish them, even with the hardest of varnishes, they will show every scratch, each snapping spark will leave



MANTELPIECE.

Designed by William H. Jackson & Co.

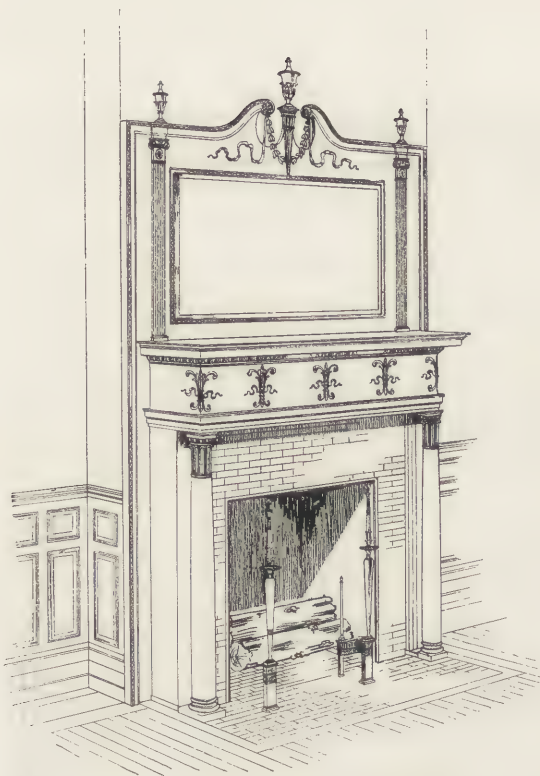
its ineradicable white mark, and chipping and blistering is often encountered which no revarnishing will obliterate. Besides this the gloss given by a varnish is not quite the best possible. It has an air of superficiality, of too much glossiness, without transparency or depth. The other treatment, the only other available treatment, is with some of the wax preparations that have to be polished.

This polishing is their chief drawback. It has to be done the more frequently the more we want a brilliantly polished floor, yet the advantages in the way of improved appearance and invulnerability to scratches are so great that it is the only thing to recommend.

As for the rugs we are to put upon

the floors, let them be, if at all possible, of some Oriental make, of some of the Persian or Turkish provinces. What are called Japanese rugs are merely of ordinary American make with fantastic devices supposed to be Japanese. If we must confine ourselves to domestic rugs there are some really excellent ones of jute. They have a silky sheen and are in quiet colors and good designs, usually rather light in general effect.

If carpets must be used, and in rented houses, where the floors are bad, we are sometimes compelled to use them, beware of almost everything that is usually done. Let the design be very retiring and inconspicuous; there would be no objection to conspicuous designs



MANTELPIECE.

Designed by Davis, Reid & Alexander.



A comfortable dining chair.



An uncomfortable chair.

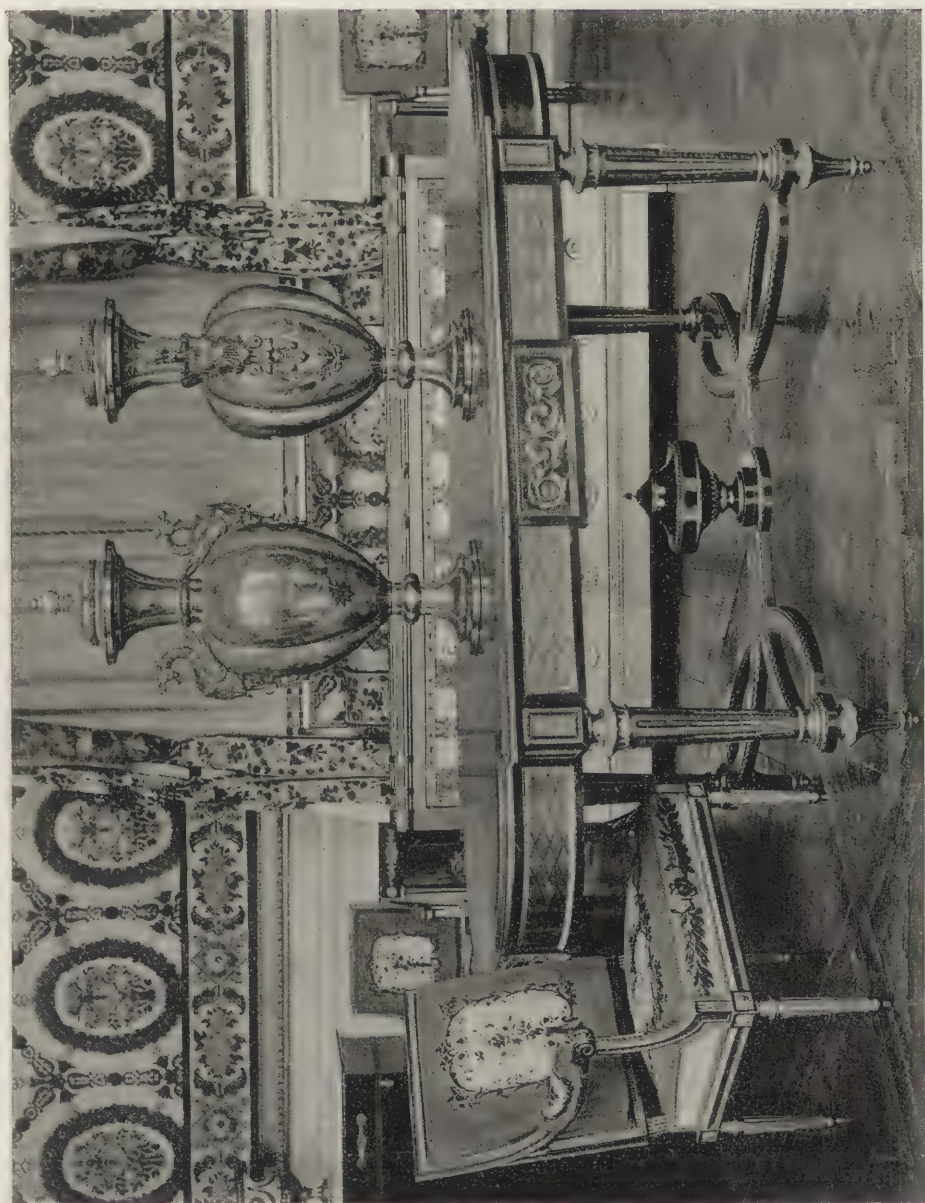
if they were good, but such are hard to find. Avoid all the black medallions with loud bunches of flowers that are sold in such quantities, and take refuge if need be in the plain colors that are the resource of the hopeless. Be careful about borders. Nothing diminishes the apparent size of a room so much as a border to a carpet. Narrow borders that keep themselves out of sight behind furniture, are not so bad, but when a border is wide enough to be seen the eye inevitably sees the space inside the border as the gauge of the size of the room.

One of the best coverings for a bad floor is ordinary Chinese or Japanese matting. It is cleanly and easily kept in order, in summer it is just the thing alone, and in winter it forms an excellent background for rugs. Its cheapness causes it to be underestimated.

An essential part of the scheme of decoration is the furniture.

Plenty of unexceptionable designs can be found; in fact the good designs have quite taken the place of the very bad ones of the past. Even in spite of the revival of renaissance design in furniture it is done skillfully, delicately and quite in the spirit of the old renaissance. Nevertheless, it is well to be cautious in buying renaissance furniture for unpretending surroundings. It is so rich that it is suited better to interiors where everything is of corresponding richness. If the surroundings be plain, the renaissance furniture with its elaborate carvings and gilded metal mounts is apt to cast them quite into the shade.

There can be nothing better than the straightforward hardwood furniture of the best make of to-day. Simple, strong, having its origin in the precepts popularized by Eastlake, but with the crude and barbarous character of the earlier designs refined and light-



LOUIS XVI. FURNITURE, COMPIÈGNE.

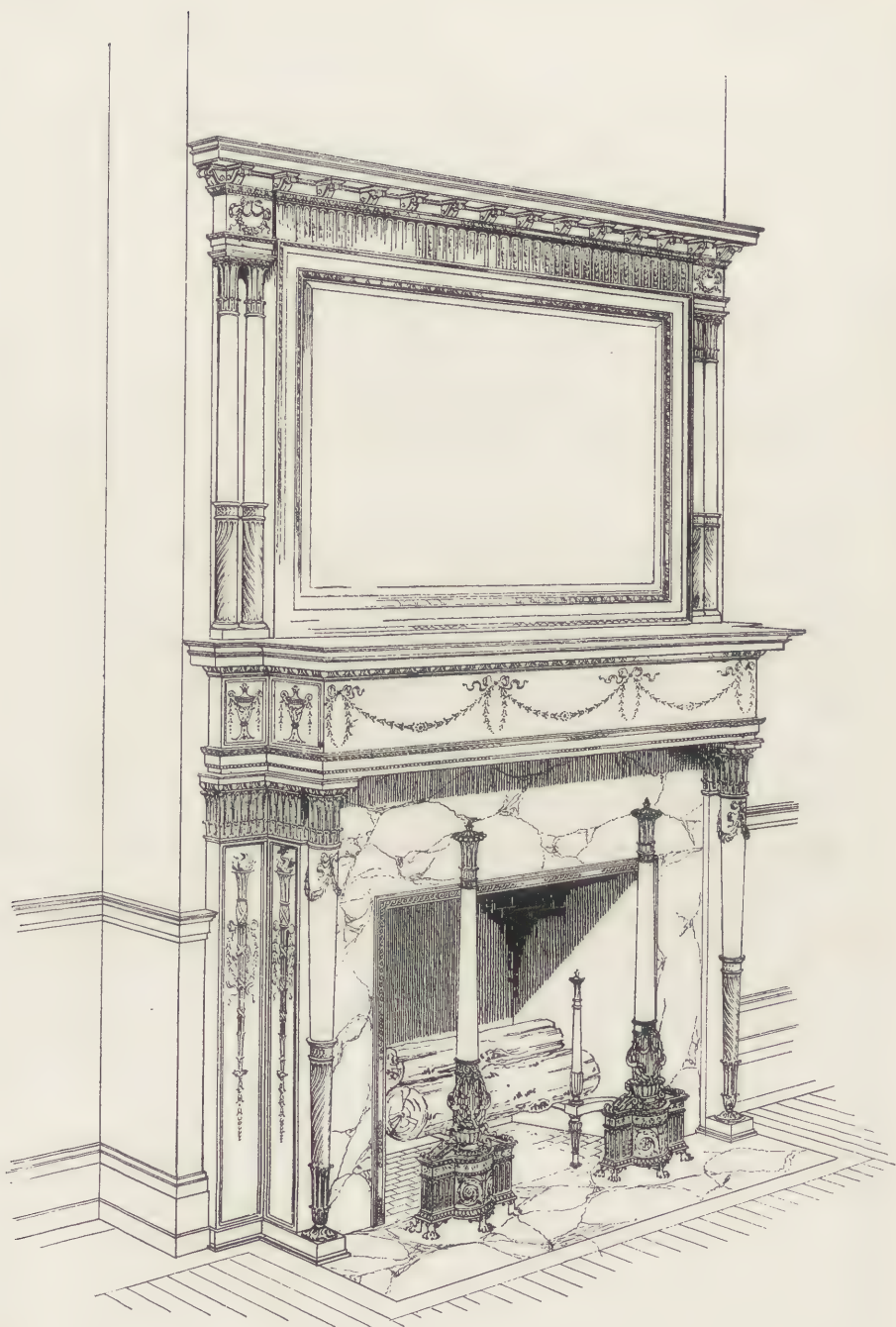


LOUIS XIV. TABLE, LUXEMBOURG;



DOOR GRILLE.

Wm. H. Jackson & Co.



MANTELPiece.

Designed by Davis, Reid & Alexander.

ened without loss of real constructive value.

They will call it in the stores by the names of various periods, but there is nothing more strictly modern and vernacular in the arts and crafts of the day.

Some passing fashions hardly recom-

to order as they are hard to find in stock.

In all of the innumerable details of decoration and furnishing, which is an inseparable part of furnishing, be guided not by the fashion of the moment, but use the fashion of the moment



NEWNHAM COLLEGE, CAMBRIDGE.

Basil Champneys, B. A., Architect.

mend themselves, the straight high-backed dining-room chair for example. If you can get hold of some of the low-backed dining chairs with arms of a generation ago, all curves and comfort, you will know how much a good chair conduces to a good dinner. But you will probably have to have them made

where it commends itself to your good sense only.

In addition to good taste which is partly inborn, dependent no doubt upon congenital differences in nerve structure, there is another criterion quite as important—good judgment. The greatest art critics that have ever lived—the

Greeks—placed good judgment along side of or even above good taste, and had a word which we inadequately translate “the becoming” or “the suitable,” denoting that which satisfied the reason, as the beautiful was that which satisfied the emotions. We cannot do better in all departments than to adopt this double critical standard.

John Beverley Robinson.



FRENCH DESIGN FOR ELECTROLIER.



ARTISTIC

"BITS"

IN PARIS



OLD HOUSE, PLACE DES VOSGES.



ANGLE TOWER, RUE VIEILLE DU TEMPLE



OLD DOORWAY, RUE ST. PAUL NO. 5.



DOORWAY, RUE STE. APPOLINE NO. 12.



OLD WINDOW, RUE FRANÇOIS MIRON.



PAVILION ON THE QUAY CITY HALL, PARIS.



ARCHITECTURAL ABERRATIONS.

No. 11.—THE MEDINAH TEMPLE.



PEOPLE talk of the cruel justice of photography, but in respect of buildings, at least, the camera is capable of gross and unscrupulous flattery. Since this series was begun it has happened that the seeker after aberrations has come upon what seemed without any doubt to be his quarry, and has hailed it with a joyful shout, only to find out, after the photograph had been ordered and taken, that the thing did not look so excruciatingly bad as it was. That was the case with a government building in a Western city, which is in fact one of the most awful results of the official method of design. A frightful jumble it is, and looks, as indeed many other government buildings look, as if it had been done in sections by different draughtsmen, so many running feet per draughtsman, and without consultation. The Supervising Architect often seems to think it an architectural as well as a moral merit not to let his left hand know what his right hand doeth. But when this horror came to be photographed, while

it remained a stupid building, it was by no means so aggressive on paper as in stone, and the notion of presenting it had to be reluctantly abandoned.

Readers must take our word for it that, even as Wagner's music has been said to be better than it sounds, so the Medinah Temple is worse than it looks. It is not likely to be admired by anybody, even in the reproduction, but the reproduction does not excite that acute horror that is evoked by the original when the wayfaring man comes upon it in the streets of Chicago. Perhaps that is in part due to its color, though it is a monochrome of buff in which many good buildings have been made. Perhaps it is because of its surroundings, for the tall buildings of Chicago are for the most part plain and businesslike, and therefore even the unsuccessful ones are not apt to be offensive. It may be that in Philadelphia the Medinah temple would look tame and quiet. Whatever be the explanation, the fact is that the Medinah temple must be seen to be appreciated.

The peculiarity of the building, as is shown from the photograph, is that it is a superposition of a palace on a factory, of a very palatial palace on a very



Chicago, Ill.

MEDINAH TEMPLE.

bald factory. The top and the bottom have absolutely nothing to do with each other, and the resulting incongruity is as great as that of a tramp with a new silk hat. Most buildings aim at some character, as of massiveness, or elegance, but this structure has two distinct characters that nullify each other and leave the spectator absolutely bewildered. It is one of the most contradictory and self-devouring edifices that were ever seen. Not only is there no

sizing anything else. The broad enclosing piers are emphasized by their breadth, which is proper and agreeable, and in these alone up to the point at which the palace supervenes upon the factory, there seems to be an intention to emphasize the height. But at this point, although the angles thus emphasized are carried up into the tower and separately roofed, the designer seems to have abandoned his intention, for he has crossed the tower with the most emphatic horizontal members possible. The



ENTRANCE TO MEDINAH TEMPLE.

general expression aimed at or attained, but there is not even a development of any one dimension. The general plan is a square, and the general form is a parallelopiped that is not far from a cube. This is a misfortune which one would suppose the designer would invoke the resources of his art to mitigate or dissemble, but it does not seem to have struck the designer of the Medinah temple as a misfortune at all.

Apparently he likes his buildings cubical and thinks a box a desirable architectural form. At any rate he has emphasized the squareness and the cubicality in the design by not empha-

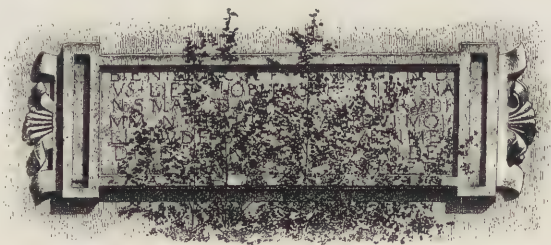
shaft of the tower, the eight stories next above the basement emphasizes the height and shoots and spindles. Above, the tower is kept down as low as can be, and thus the feature is self-contradictory. The treatment is an illustration of the variety of purpose which is the main part of the design. So far as the general composition betrays any purpose, it is to aggravate the unfortunate squareness of the mass. To this end, if to any are the square towers at the corners of the square. To this end the careful avoidance in the main mass of emphasis either upon the horizontal or the vertical lines, and in the towers

the emphasis of vertical and horizontal lines by turns.

But undoubtedly the variety of purpose is carried to its extreme limit in the superposition of the palace on the factory. Most people have heard of the famous criticism of Frederick the Great, when he came home from the wars, upon the new museum that had been built during his absence. He said it was a jail at the bottom, a church in the middle, and a bower of Lydia at the top. A like criticism may be passed upon the Medinah temple.

The only explanation it suggests of its purpose is that an Oriental gentleman engaged in mercantile pursuits, pursues his business on strictly business principles, and keeps his harem in luxury and regardless of expense over the shop which pays the expenses of his sumptuous living, giving only an indication in the gorgeous doorways of the bald basement of the voluptuous delights that await him upstairs. The negation of architecture, even to the most rudimentary expression of the construction in the lower part is violently contradicted by the sacrifice of everything to architecture in the upper. The sacrifice is very complete, for what can be the use of the thirteenth story, between the towers? The variety of purpose is so great that it is difficult to believe that it is all the work of the same man. Rather it seems that a builder, having con-

structed ten stories in the simplest and baldest way for purposes of mere utility, had suddenly been smitten with compunction, and impressed with the necessity of doing something for art, and had called in an artist to let himself loose upon the entrances and the upper stories, regardless of reason or expense. It recalls the application of Artemus Ward to the young man whom his daughter introduced to him as an artist who threw so much soul into everything he painted. "What will you charge to throw some soul into my fence?" That would explain the soulful and even gushing crown of a soulless and most prosaic structure. The soulful gentleman was not particular about the sources from which he drew his decoration. It purports, in a general way, to be Saracenic, and Saracenic architecture lends itself so readily to surface decoration and to terra cotta that it seems odd it should not be oftener invoked. But there is a mixture of French and Italian Gothic with the Saracenic, and the Italian belvederes do not consort very well either with the fenestration or with the mural decoration. Still the general aspect of the building and its expression are pretty distinctly Oriental. The rigid devotion to business in the business part of the structure and the exuberant pretentiousness of the social or domestic part imparts to it this character which, if not specifically Saracenic, is pretty evidently Semitic.





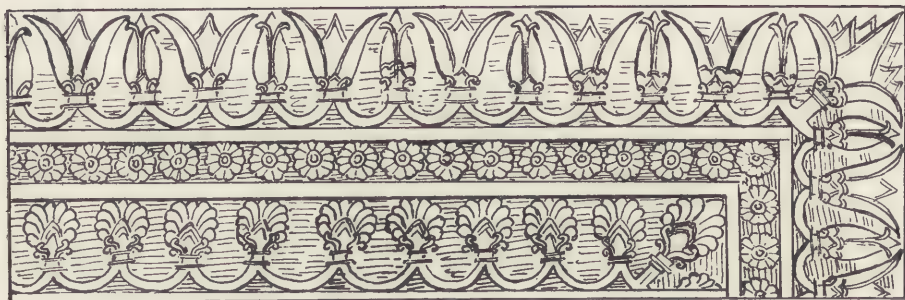
THE COFFEE EXCHANGE NEW YORK
R.W. GIBSON ARCHITECT



THE CONTINENTAL INSURANCE COMPANY'S BUILDING.

Cedar street, New York City.

Chas. W. Clinton, Architect.



ORIGIN OF THE ACANTHUS MOTIVE AND EGG-AND-DART MOULDING.*

I.

SINCE the publication of my last Paper I have to thank my friend Dr. H. Colley March, of Rochdale, England, for the great favor he has done me in bringing to my notice the researches of Dr. Hjalmar Stolpe, of Stockholm, on the pattern ornament of the Hervey Islands in the South Pacific.†

The ornamental system of the Hervey Islands, which is most easily known through the curious ceremonial axes to be seen in various museums, among others the Natural History Museum of New York, offers the only geometric patterns which ever occasioned me serious disquietude as to the belief which I have reached through the study of Greek ornament, that geometric patterns made for purely decorative purposes are absolutely foreign to the nature of primitive and prehistoric man. • Since I have become acquainted through Dr. March's kindness with Professor Stolpe's proof that the "K pattern" of the Hervey Islands is derived from a series of human figures having magical and religious significance, and with Professor Stolpe's convictions that natural forms imitated for magical or

symbolic purpose are generally the basis of linear patterns in the Pacific ornamental systems I have no hesitation in saying that the lotiform origin, historic continuity, and traditional repetition of the system of patterns with which I am dealing will soon cease to be a matter of doubt with every well-informed person.

Before continuing the argument of my last Paper, let me say, therefore, that I am gradually moving toward a demonstration for the historic continuity of the meander pattern (so-called Greek fret) wherever it is found, and that this demonstration will ultimately revolutionize the study of American antiquities and of the Asiatic cultures as related to them.

On the general subject of the magical uses and realistic beginning of primitive art I wish also to call attention to a recent article in the *Popular Science Monthly* (April, 1894, "The Origin of Art.") This announcement by M. Lazar Popoff is the first which I have seen of a conviction which I had independently reached by quite another line of study, regarding the magical purpose of the now famous drawings of the cave men of Palæolithic Europe.

* Being the Fifth Paper of a series on the Evolution of Classic Ornament from the Egyptian lotus.

† "Evolution in the Ornamental Art of Savage Peoples; Ethnographical Researches, by Dr. Hjalmar Stolpe, of Stockholm," translated by Mrs. H. C. March. [Reprinted from the "Transactions of the Rochdale Literary and Scientific Society."]]

II.

Before taking up the egg-and-dart moulding and its related motives it is necessary to continue the argument for which my last Paper on the anthemion furnished the necessary basis, by show-

stated. It only needs to be illustrated.

I will first notice the distinction between isolated scroll or spiral ornaments, and the continuous spiral scroll. By the continuous spiral scroll I understand a motive like that on the bronze



Prehistoric Swedish bronze axe. Continuous spiral scroll.

ing that this argument involves the unity and lotiform origin of all classic spiral and scroll ornament. The spread and expansion of spiral ornament from its original home and centre is a distinct question. That the spirals and scrolls of modern Europe are derived from the Greek, that the spirals of prehistoric Europe are derived from Egyptian, that the spirals of the Malay Archipelago are derived from India and these again from Mohammedan and these again from Byzantine, that the spirals of modern Alaska or the Aleutian Islands can be traced to the Yakoots of Eastern Siberia and these again to the Buddhists of India and Thibet, or the Mohammedans of Turkestan and Mongolia—these are facts whose demonstration has little or nothing to do with the question of original evolution.

For the time being I will confine myself to Greek art and to the proposition that all the spirals and scrolls of Greek art are lotuses in origin. The demonstration for a very large series is a very easy one. It consists in an appeal to the expert in Greek ornament to verify the fact that all the isolated or disconnected spirals and scrolls of Greek art, as distinct from the "Mycenæ" continuous spiral scroll, are simply variants of the Ionic form and of the anthemion. As we have already proven the Ionic form and the anthemion to be lotuses the resulting conclusion need scarcely be

axe herewith from Sweden. This continuous spiral scroll is very rare in early Greek art, but very common in the art of the "Mycenæ culture," which I believe, with others, not to have been Greek. In place of the continuous spiral scroll in early Greek art we find the meander and the guilloche, both of which are mainly, perhaps entirely, unknown to the art of the "Mycenæ culture" as so far discovered to us.

Considering by contrast with these above-named motives the scattering or isolated Greek scrolls and spirals it is clear that the expert who observes them all to be variants of Ionic forms or of anthemions has observed them all to lotuses, according to the demonstration, in my last Paper, for the original identity, as regards derivation, of the Ionic capital with the anthemion.

We must now therefore observe the far-reaching consequence of this identification of the Ionic capital with the anthemion. It obliges us first to concede to be lotuses all the Ionic forms of surface ornament in general which correspond to the demonstration already given for the Ionic capital. Because the demonstration for the anthemion includes surface ornaments as well as architectural members (for the anthemion is found in both characters), therefore the argument at large is now transferred from architectural members to surface ornaments, for the Ionic form as well as the anthemion. In other words, we begin now to consider the

Ionic forms which are not capitals. For instance, if the Ionic capital of Mashnaka, herewith in text-cut, be a lotus, according to the same demonstration we must include the detail No. 18 on page 91. If the survival of the central sepal spike fixes the lotiform derivation of the Assyrian and Etruscan Ionic capitals herewith in text-cut, it also fixes the



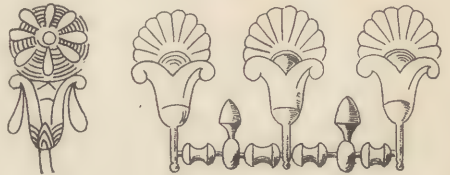
lotiform derivation of the pottery ornaments on Melian vases like Nos. 4, 5, 12 of page 91. If we admit the Cypriote lotus flower to our argument for the Ionic capital we cannot exclude the Rhodian derivatives of page 91, Nos. 14, 16. Compare the Cypriote detail in text-cut.



Finally, when we consider the curious varieties of the Proto-Ionic form which I have collected on page 91, noticing that some are amulets, some pottery details, some decorative details in carvings, and some capitals or steles—it is quite clear that the Ionic capital is only one instance of a larger, more comprehensive fact in the history of the volute.

It is when we turn to the anthemion itself, however, that the really tremendous significance of our demonstration of the last Paper begins to dawn upon us, as regards the volute and spiral in Greek art. Consider how endless are the variants of its anthemions. Although the anthemion also appears like the Ionic capital, as an architectural terminal ornament or even as a support, when some forms are considered, its variants and types in surface ornament will outnumber the phases of the Ionic form proper, ten thousand to one. In nearly all these types and variants the volute appears; wherever it appears in all these types and variants the one demonstration holds.

In considering these variants I think we ought first to distinguish between those which appear in the earlier works of Greek art, and which are due generally to the original distinction as to individuality and character between a Greek and an Egyptian or which are due especially to the transfer of the motive from hard material to brush work on pottery—and those variants which are due to the general historic movement in Greek art, from the simple to the complex, from the primitive and symbolic to the ornate, highly elaborated and purely decorative motives.



Egyptian types.

In speaking of the former class we shall do well again to return first to the Egyptian originals and notice what amount of variation they exhibit. In



Phenician types.

the Egyptian types of the lotus palmette, whose derivation from a combination of lotus and rosette has been explained and illustrated in my last Paper, we shall notice a certain severity of outline and formalism of treatment, whether in hard material like a porcelain amulet, in jewelry, or in fresco. The types herewith above, are



Cypriote and Persian types.

mainly reminders or repetitions of those already illustrated. In the Oriental (Assyrian or Phenician) copies of these



VARIANTS OF THE IONIC FORM, ARRANGED TO SHOW THE IDENTITY OF THE IONIC CAPITAL WITH THE SAME FORM IN AMULETS AND DECORATIVE DETAILS.—1, Cypriote capital. 2, Cypriote pillar capital. 3, Cypriote pillar capital. 4, Melian pottery. 5, Melian pottery. 6, Detail of a Greek mirror handle. 7, Syrian capital. 8, Assyrian ivory detail. 9, Egyptian fresco motive (18th Dyn.). 10, Etruscan Ionic capital. 11, Ionic capital, Macedonia. 12, Melian pottery. 13, Assyrian ivory detail (Egypto-Phenician). 14, Rhodian pottery detail. 15, Jewish capital. 16, Rhodian pottery. 17, Early Athenian capital. 18, Greek furniture detail, from pottery.

motives we notice the same character. The extreme limit in the direction of free and graceful variation reached by Oriental art, is denoted by an Assyrian fresco motive herewith.



Assyrian types.

We shall do well to consider first among our Greek motives those which adhere most closely to the Oriental type. In Cypriote Greek art, as is natural, we find the closest exact repetitions of the Egyptian type, for instance in the tendrils between the upper scrolls of the Cypriote pillar capital herewith. The same lotus palmette on a tendril is occasionally found in early Italian art, probably derived from the Cypriote. Let us add now some of the Greek pottery motives which have the closest relation to the originals on metal or other hard material, for it is clear that imported works in metal first carried the lotus palmette to Greece and Italy (text-cuts below).

From the point indicated by these normal forms on pottery (meaning by normal forms those types in which the two original divisions of the lotus palmette, viz., demi-rosette and lotus volutes, are about evenly balanced, and which are consequently normal to the original type), the Greek anthemion moves in two directions—either toward types in which the palmette predominates and occasionally appears without any volutes whatever, or toward types in which the spiral is the dominant member and also occasionally the sole survivor.

Still another class of anthemion variants is that in which one spiral of the



Cypriote pillar capital on which appear lotus palmettes on tendrils. (Ohnefalsch-Richter.)



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2

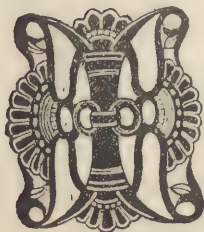


3



4

Early Greek anthemions, normal types --1, 2, 3, Pottery design taken from metal. 4, Design on metal.



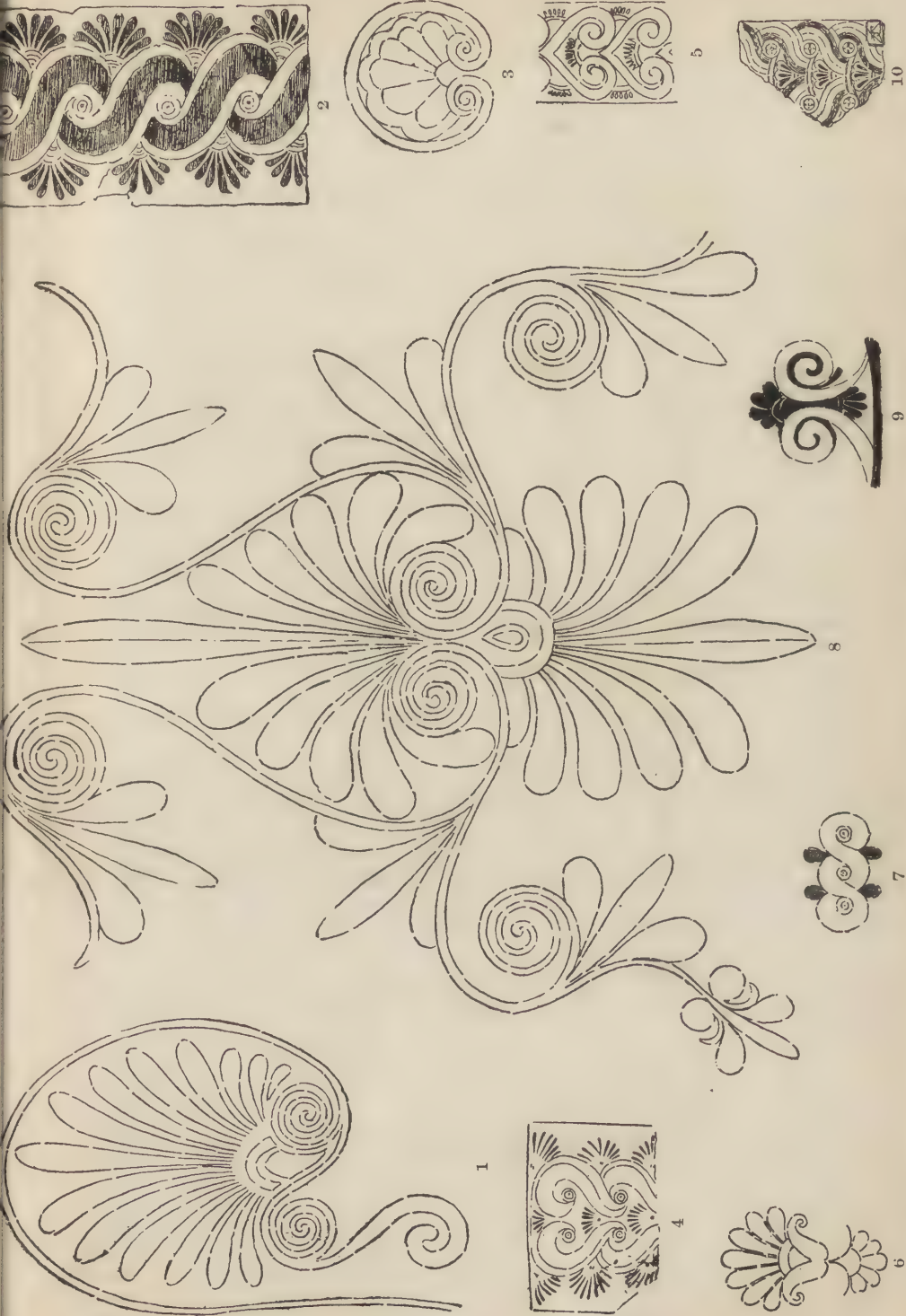
Greek pottery types, arranged to illustrate contrasts of development for palmette and spiral.



VARIANTS OF THE ANTHEMION, ARRANGED TO CONTRAST PRIMITIVE WITH LATER DECORATIVE FORMS.—1, Late Greek stone carving, Macedonia. 2, Assyrian ivory detail (Egypto-Phenician). 3, Primitive Greco-Etruscan or Phenician, Regolini Galassi tomb, bronze *repoussé*. 4, Egyptian amulet (compare Fourth Paper, page 286). 5, Cypriote pottery (Sacred Tree). 6, Rhodian pottery. 7, Late Greek stone carving, Macedonia. 8, Greek stone carving, Sicily. 9, Incised bronze, Greco-Etruscan. 10, Primitive Etruscan Ionic capital. 11, Early Greek terra-cotta antefix, with upturned spirals; from Tiryns.



VARIANTS OF THE ANTHEMION.—1, Greco-Etruscan bronze *repoussé*. 2, Greek pottery form (to compare with No. 4). 3, Greco-Etruscan bronze *repoussé*. 4, From a Rhodian vase. 5, Asia Minor stone carving; lotus buds and palmettes, mistaken by Ferrot for "oak leaves and acorns." 6, Anthemions showing inverted or upturned volutes; stone carving from Macedonia.



VARIANTS OF THE ANTHEMION AND GUILLOCHE, SHOWING LATER DECORATIVE ELABORATION (8) TO COMPARE WITH EARLIER (1 AND 3) AND PRIMITIVE (6 AND 9).—
 1, Greek pottery. 2, Guilloche with palmettes from Greek terra-cotta sarcophagus in Vienna. 3, Greek pottery. 4, Greek pattern of connected anthemions with inverted volutes.
 5, Greek pattern, bronze *repaussé*, of connected anthemions. 6, Greek pottery. 7, Guilloche with lotus buds, Greek pottery from Egypt. 8, Greek pottery. 9, Greek pottery.
 10, Painted Greek terra-cotta; connected anthemions with upturned volutes (compare No. 4).

normal form is inverted to produce a scroll (see cut). These cases of the



Spiral scroll, Melian pottery.

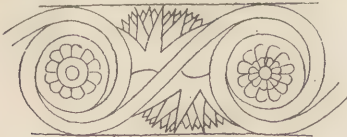
scattering or isolated scroll are confined to the archaic Greek vases and are not very common on them. The general survival in these cases of the palmette filling is sufficient proof of the palmette



Melian types of the scroll and spiral.

lotiform origin. One way in which such an inversion might originate is suggested by the arrangement herewith of Melian doubled lotuses repeated from my last Paper.

The alternating inversion of one lotus volute is, however, a constant appearance in the Egyptian lotus spirals and the suggestion for the inversion of one volute of the anthemion was probably hence obtained, as the Greeks in Egypt must have been in daily contact with this pattern (text cut herewith).



Egyptian type of the lotus spiral.

Still another phase of anthemion variation is that shown on page 95, by Nos. 4, 5 and 10, and in larger detail on page 275 of my last Paper. I should add that the appearance on this plate (page 95) of two phases of the guilloche, although combined with lotus buds and lotus palmettes, is premature as far as my present argument is concerned. (Nos. 2 and 7.)

I must finally call attention to those anthemion variants in which both volutes are inverted and turned upward

page 93, No. 11 and page 94, No. 6. Among all these phases of the anthemion, the most constantly repeated and most familiar is the type found on Greek vases alternating with lotus buds or lotus trefoils.



Greek pottery types of lotus trefoils and anthemions.

As time went on most of the primitive forms enumerated were transformed and elaborated by decorative foliated details. The type of the fifth century B. C. in stone carving is easily distinguished from that of the fourth or third, and I have arranged the details of pages 97 and 98 to illustrate the general movement from simplicity to elaboration.

The first appearance of such foliage detail known to me is at the base of the anthemions of the Erechtheum. For the decorative transformations of the lotus itself in Alexandrine art and in the Roman art derived from it, a fine indication is furnished by the illustration of page 99. In this case the anthemion itself preserves a more definitely primitive form and assists us to specify the origin of the intermediate foliate detail. The student is often assisted in this way in specification of more remote forms by the associated survival of others more easily defined or by the association of two forms, both remote but both specified by the asso-



1



2

VARIANTS OF THE ANTHEMION ARRANGED TO SHOW CONTRAST OF LATE AND EARLY FORMS.—1, Early Rhodian vase, from Salzmann; anthemions, normal lotuses and buds. 2, Late carved anthemions from Macedonia.



SCULPTURED ANTHEMIONS ARRANGED TO ILLUSTRATE DIFFERENCES OF STYLE ACCORDING TO DIFFERENCE OF PERIOD.—Nos. 1 and 2 are early; Nos. 3, 4 and 5 are late.
 1. Terra-cotta antefix, Italy, repeated from page 288, Fourth Paper. 2. Anthemion of the Parthenon, repeated from page 289, Fourth Paper. 3. From Macedonia. 4. 5. Terminals of Athenian tombstones.



Greco-Roman anthemion and foliated lotus. Leaf-and-dart border below. Lateran Museum.

ciation. For example, in the Hindoo pottery motive herewith we might possibly be doubtful either of the bud or

III.

By the foregoing illustrations and text I have mainly wished to indicate one cardinal fact, viz.: That in Greek art the isolated volute or scroll is always a lotus, and demonstrably so by attention to the types of Ionic form and anthemion, because there are no isolated or scattering volutes which are not demonstrably Ionic or anthemion variants. The question now rises, does the continuous spiral scroll of ancient art also come within the evolutions of the lotus. This question is complicated by the fact that the continuous spiral scroll was not originally native to Greek art. It appears in forms which are apparently purely linear in Egyptian art, in the art of the "Mycenæ Culture" and in that of prehistoric Europe of the Bronze Age. We shall find it advisable to consider the problem of the continuous spiral scroll in connection with that of the meander pattern or "Greek fret," and of concentric rings, and before these motives can be accounted for we shall be obliged to illustrate certain curious facts regarding the originally magical and talismanic use of the motives so far debated.



Hindoo pottery motive. Ionic lotus and buds.

of the lotus were the forms separated, but the traditional association makes us certain of both. On the other hand, in late antiquity and still later time we

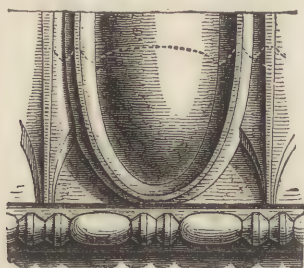


Survivals of primitive types in late Greek and Greco-Roman design. From stone carving and terra-cotta.

constantly meet with survivals of quite primitive forms, as witness the text-cuts herewith representing late Greek and Greco-Roman forms.

These facts are reserved for a separate Paper which will precede and lead up to another on the meander and the continuous spiral scroll, and I shall now

turn to the topic of the egg-and-dart moulding and its variants, among which the leaf-and-dart, also known as the leaf-and-tongue, is the most familiar. The egg moulding is now in



Egg-and-dart moulding.

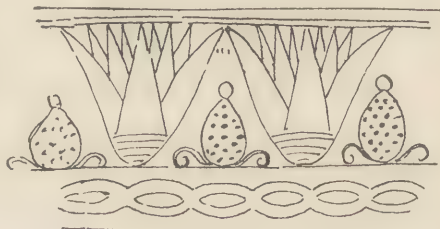
such universal use wherever European civilization has penetrated, and is so well known to be derived from Greek art wherever it is found, that the demonstration of its at once realistic and talismanic origin has far-reaching significance.

This demonstration is moreover one of almost amusing simplicity. A few moments' attention to those forms of the lotus border in flat and painted decoration which are most familiar to the student of patterns in Egyptian and early Greek use, is all that is needed to produce conviction. I have never met either an expert or a layman who did not instantly concede the demonstration which inverts the lotus border and then shows the result in a carved pattern, of incising the trefoil lotus flower. My adverse critics have wisely avoided debating this demonstration and those who have cast wholesale ridicule on the conclusions of the Lotus Grammar have found it convenient not to mention the subject.

I need not say that the enormous expense to my various publishers of getting out the absolutely necessary illustration has caused me throughout my publications to avoid the republication of the better known and universally recognized lotus patterns—better known, that is, to students of ancient art and universally recognized by Egyptological experts. The constant repetitions of these patterns, although well known to some, cannot however be

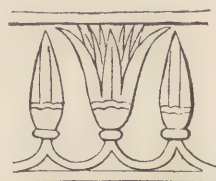
familiar to those who are novices in the history of ancient art, and yet it is also among these novices that I am looking for converts and believers. The Ethnologist, the Anthropologist, the partisan of evolution in Natural History, the student of Psychology as founded on the comparative study of barbaric and primitive man, the Historian of civilization—these are among the persons who are most accessible to an argument for the evolution of patterns from natural forms, most accessible to the proposition that decorative art as such was unknown to primitive antiquity, to the proposition that the primitive mind more easily creates a picture than an abstract geometric form, to the proposition that the man in a frock coat and pantaloons who amuses himself by drawing diagrams with his cane on the sand at the sea side is a different being from the Zuni who sees a magical formula in every painted line of his pottery.

Therefore I would urge on the reader of these pages, if unfamiliar with publications on ancient art, to compare my single text-cut herewith for the com-



Typical Egyptian border of buds and lotuses. From a tomb pattern in color.

monest of all Egyptian lotus borders, with the plates of Owen Jones' "Grammar of Ornament," or, Prisse d'Avennes' *Histoire de l'Art Egyptien* in order to appreciate their great number and constant repetitions. For Assyrian art, which borrowed and repeated this pat-



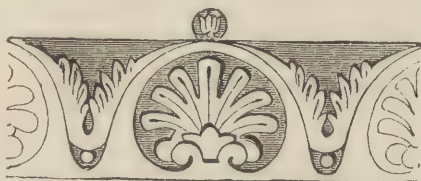
Typical Assyrian border of buds and lotuses. Detail from stone carving.

tern *ad infinitum*, let my one text-cut here entered suggest a reference to the plates of Layard, or the illustrations of Perrot. For the ordinary Assyrian lotus border as borrowed from Egypt see also p. 279 of my last Paper. For Hindoo art let my single text-cut suggest count-



Typical Hindoo border of buds and lotuses. Detail from pottery.

less other illustrations accessible in Birdwood's "Industrial Arts of India," in Fergusson, or in the "Archæological Survey of Southern India." Japan and China will occasionally furnish types of the same familiar pattern. The pottery of the Saracens in all periods, of



Renaissance border of anthemions and lotuses. From stone carving.

modern Morocco and of modern Spain, is full of it. Here and there you will find it in the stone carvings of the Middle Age. In Renaissance decoration its appearance is frequent.

It is surely significant that side by side with this continuance of the familiar and easily recognized lotus border in flat decoration there is to be found

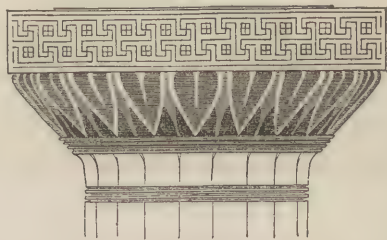
another motive in projected carving whose connection with it was forgotten at least as early as the fifth century B. C. and whose derivation from it is a mathematical certainty notwithstanding.

The egg-and-dart moulding as such is unknown to Egyptian patterns, a fact explained by the almost entire absence in Egyptian art of carved or incised lotus borders of any kind, the preference for flat ornament in color being the rule. Stone-carved patterns of any kind in Egyptian art are quite



Lotus trefoils in bronze *repoussé* from Olympia. Motive producing the egg-and-dart when inverted.

rare before the Ptolemaic period. In Greek art the absence of patterns in projected carving is also a general rule down to the time of the Erechtheum. In Greek art also color decoration on flat surfaces was the rule in architecture for earlier periods. We have an instance on the Doric capital herewith of the



Doric capital from Aegina—the original leaf-and-dart was in color.



Detail from the Erechtheum. Egg-and-dart and leaf-and-dart borders above anthemions.

pattern in color which produces the egg-and-dart moulding when it is incised, and we know this flat color pattern to have been very frequent in earlier Greek art.

the failure of science to specify this fact has resulted in oversight of obvious connections between the types of Egyptian ornament and the forms in nature of the blue and white Nymphæas,



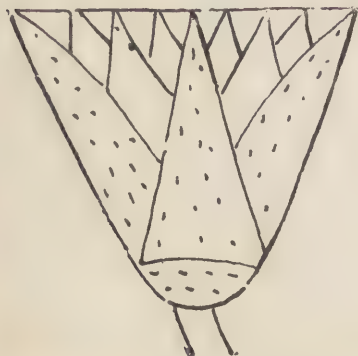
Ancient Persian egg-and-dart moulding. Greek derivative.

Our obvious proof for the relation of the egg-and-dart to the lotus is, however, derived from those lotus borders of Greek vases which are especially numerous on the pottery from the Greek Colony of Naukratis in the Nile Delta and on the pottery of Rhodes (see page 103).

Concerning these Greek borders in flat decoration three things have now to be observed—the frequent alternation with lotus buds, the frequent inversion of the border, and the frequent conventional reduction of the lotus to a trefoil form (page 103, Nos. 1 to 6 inclusive).

I have already pointed out in my third Paper* that the "Rose Lotus" did not find a place in the typical ornament of Egypt, that

*ARCHITECTURAL RECORD for December, 1893. Much more explicitly in the "Grammar of the Lotus."

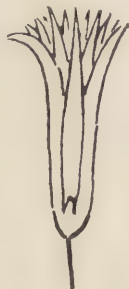


and that the most conspicuous instance of such connection lies in the "three-spiked" appearance of Egyptian lotuses as found in ornament, and as copying from nature the four calyx leaves of the natural flowers, and hence showing three in side view.*

If we now examine the fragments of Greek pottery on page 103 we shall find a survival of the petals on two of the details (Nos. 2 and 3) and a simplified conventional reduction to the trefoil form of the calyx leaves in the others (Nos. 1 and 4).

We will next consider the matter of the frequent inversion of the lotus border in Egyptian and in Greek art. In both cases the inversion is a frequently necessary decorative expedient. Where the border runs under the line of a tomb ceiling as frequently in Egyptian art, the line of the ceiling, that is the top of the wall, is the natural line of

*Pages 156 to 161 inclusive, Number for December, 1893.



Typical Egyptian lotuses showing the type of the Nymphæas and illustrating the three-spiked form as origin of the trefoil.



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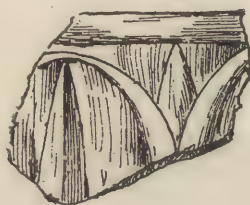
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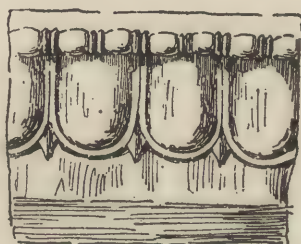
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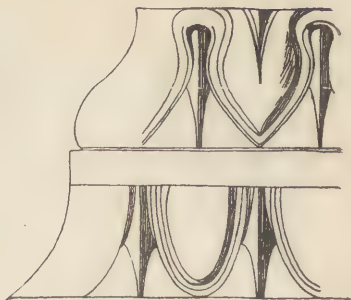


12

EVOLUTION OF THE EGG-AND-DART MOULDING. Illustrated by details from Greek pottery and Naukratic stone carving.—1, 3, 4, Greek pottery, Naukratis. 2, 11, Greek pottery, Rhodes. 6, Italian painted terra-cotta. 5, 7, 9, 10, 12, Greek stone carving, Naukratis. 8, Typical egg-and-dart moulding (late Persian). Nos. 7, 9 and 10, 12 are duplicates, alternately erect and inverted.



Cypriote pottery lotuses illustrating the evolution of the trefoil from the type of the *Nymphæas*.

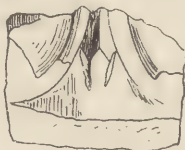
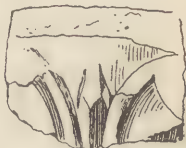
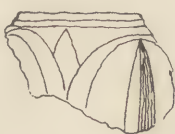


Detail from the Erechtheium mouldings.

attachment for the bases of flower and bud, therefore the border is inverted. In Greek vases, for instance, in the Rhodian vase, No. 8 of page 103, the border is inverted at the neck of the vase



Egyptian lotus trefoil.



because the decorative lines thus widen to correspond with the expansion of the vase. For the same reason the border is erect at the foot of the vase.

We will finally notice once more the alternation of the buds in these lotus borders because these explain the rudimentary survivals of incisions on the so-called leaves of the so-called leaf-and-dart mouldings of the Erechtheium or the painted lines coming to a point on the Italian color border of page 103, No. 6. On the carved lotus trefoils of Naukratis the bud is still seen in palpable form (p. 103 and p. 104).

It is the inversion of the border which obscures its origin; all that is needed to understand this origin is the habit of looking at lotuses upside down.

In its logical element the egg of the egg-and-dart is simply a semi-oval space between two lotuses, the dart is simply the central calyx leaf of the three which make the trefoil. As soon as the trefoil is incised by carving, the necessary result is a series of rounded semi-oval or leaf-shaped projections, between which are the darts or tongues. On the semi-oval or leaf-shaped projections occasionally appear the



Details from Naukratis shown both erect and reversed and compared with an egg-and-dart moulding.

reminiscences of the intervening buds as on the Erechtheium leaf-and-dart moulding. As the Erechtheium moulding shows both the form of the "egg" and the form of the "leaf" it is easy here to see that the "leaf" is only a variant which results from giving a bend to the curve of the side of the lotus. Interesting variants belonging to a more elaborately decorative stage of ancient ornament are seen on Roman frieze motives of the page opposite. The egg-and-dart of the lower frieze is interesting on account of the complete obliteration of the starting point of the motive. In the upper decorative border of this frieze we have a variant



1. GRECO-ROMAN FRIEZE, LATERAN MUSEUM.—On the upper border an incipient egg-and-dart motive, lotus trefoils, not inverted. On the lower border variant of the leaf-and-dart, with small lotuses inserted in intermediate spaces.



2. GRECO-ROMAN FRIEZE, LATERAN MUSEUM.—On the upper border an elaborated variant of the leaf-and-dart, derived from the motive above. On the lower border the typical egg-and-dart.



Cypriote Greek vases in the New York Museum, with lotus borders suggesting the evolution of the egg-and-dart.

of the leaf-and-dart in which a small lotus takes the place of the dart. Such variants are to be understood as afterthoughts quite independent of the earlier evolution, as far as the small lotuses in the intervening spaces are concerned. In the lower border of the upper frieze an erect lotus takes the place of the "leaf." The upper border gives an instance of low relief incision of an erect lotus border with intervening incisions reminiscent of buds, the whole showing an incipient stage of the egg-and-dart moulding when the lotus border is not inverted.

I was first put on the track of this egg-and-dart evolution by two Cypriote vases in the Metropolitan Museum, still to be seen in the cases. One of them exhibits a rude lotus border and



Sketch from the lotus border on a Cypriote vase herewith. See above.

intervening buds; the other shows the same pattern duplicated by the attachment of a reversed pattern to the one which is erect. This duplication is an isolated case. I have never seen another, but the egg-shaped ovals are so clear on this vase that I took the hint and worked the problem out by recourse to the fragments of stone carving from Naukratis which had then just been published (page 103).

IV.

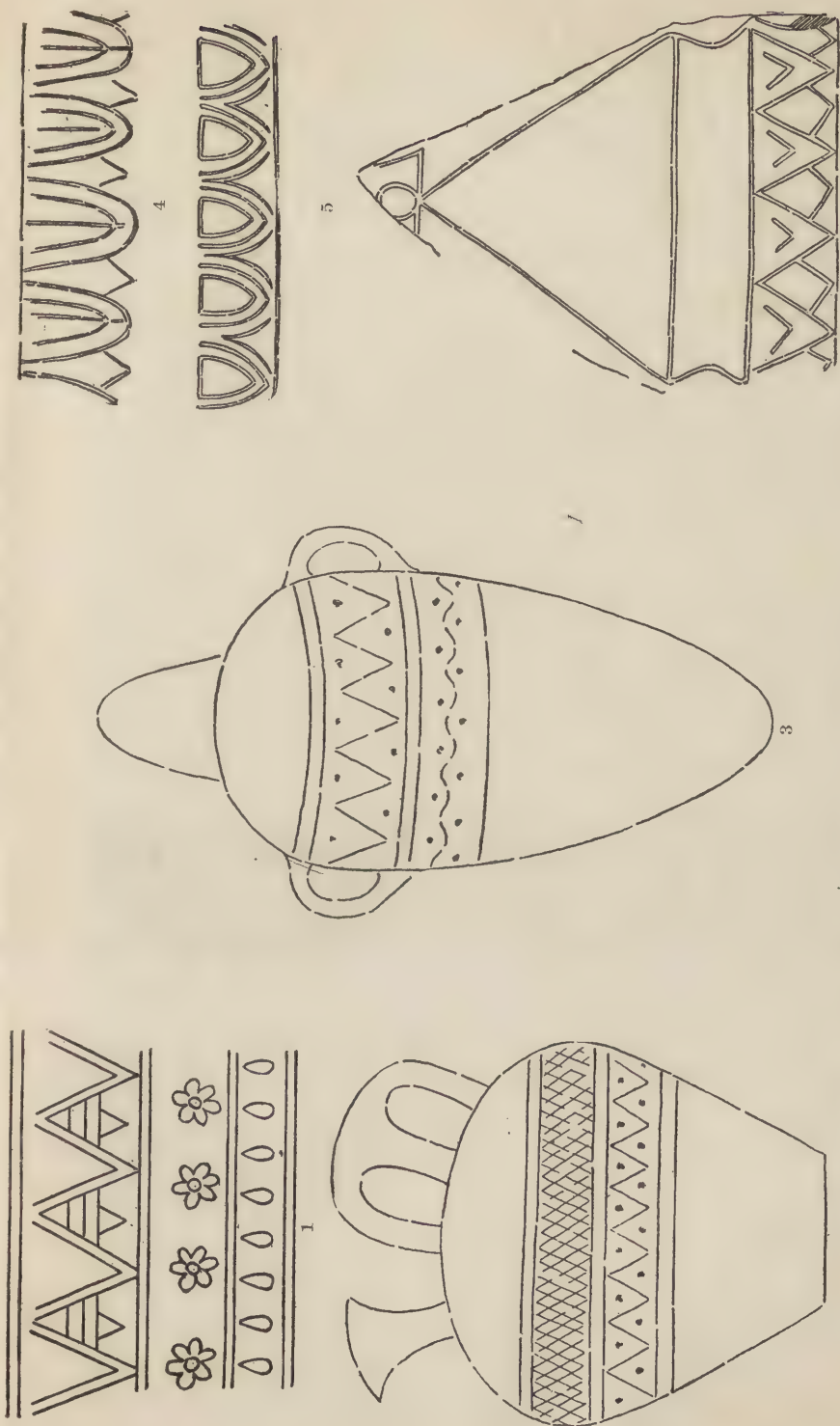
There is an interesting counterpart to this evolution in Egyptian art, viz., the chevron. The evolution of the Egyptian chevron pattern is illustrated on page 107, first by a Phœnician votive tablet of sun and moon worship from Carthage which copies rudely the Egyptian pattern. If the reader will turn this illustration upside down he will perceive a rude series of lotus trefoils, or rather triangles, with rudiments of buds on the intervening triangular spaces, roughly indicated by lines meeting at an angle. The step from this stage to a series of chevrons pure and simple was an easy one.

The pattern of simplified lotus trefoils made with straight lines is a very common one on mummy cases. Various



Inverted lotus trefoils as origin of the chevron pattern. From mummy case in Turin. Author's sketch.

stages of "degradation" of the patterns by which it merges into a series of chevrons are common on the same class of monuments. On the Egyptian pictures of Egyptian vases the chevron pattern thus derived is very common and it still survives on the Egyptian water jars used on the Cook steamers on the Nile and elsewhere commonly used in Egypt. The first thing which I noticed in the first Egyptian hotel I



ARRANGEMENT TO ILLUSTRATE THE ORIGIN OF THE EGYPTIAN AND PREHISTORIC CHEVRON PATTERNS.—1, Detail of a mummy case in the Ghizeh Museum (author's sketch); inverted lotus trefoils, rosettes, buds. 2, 3, Egyptian vases, from tomb pictures. 4, 5, Details from a Phœnician tablet of sun and moon worship, Carthage; pattern of inverted lotuses (egg-and-dart pattern) and conventional derivative. 6, Phœnician votive tablet, Carthage; inverted border of rude lotus trefoils.

ever entered (at Ismailia) was this survival of the chevron pattern on a modern water jar. It also survives on the Kabyle pottery of North Africa (Boston and National Museums), and in other African ornament it is the most commonly repeated motive. In the prehistoric period it traveled all over Europe and forms one of the four typical patterns of the European prehistoric Bronze Age—the others being also Egyptian in origin—viz.: concentric rings, the continuous spiral scroll, the meander and lines of pot-hooks (derived from lines of geese).

I am far from supposing that a chevron pattern might not be derived also from other sources, but the historic continuity and original unity of the chevron pattern in prehistoric Europe are easily demonstrated. How far it traveled outside of Europe we can debate more easily after the meander has been considered, but there is no doubt that the European and Egyptian chevron can be traced through and beyond India at least as far as the farthest confines of the Malay archipelago. Should any one consider this fact surprising, I will suggest that it is not more surprising than the similar survival and present diffusion of the egg-and-dart moulding itself, its transfer from ancient Greece to modern Europe and from modern Europe to modern America. The spread of Greek culture explains the one, the spread of Arab Mohammedan culture as derived from Byzantine and Sassanian explains the other.

To return for a moment to the original evolution of the motive we find an interesting parallel in other forms of the lotus border on Carthaginian tablets. The two borders Nos. 4 and 5 on page 107 are illustrations. One shows the border of inverted lotuses with curved sides. The other shows a series of half ovals from which the central calyx leaf has been dropped. Turn these curves into straight lines and you produce the chevron pattern.

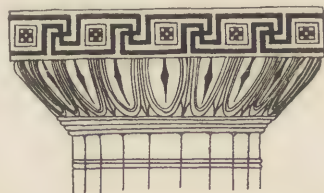
This chevron pattern can be dated at present to the Eleventh Dynasty in Egypt, about 3,000 B. C. This is the date of the mummy case of King Antef in the British Museum, the earliest

monument known to me which exhibits it, but the presumption is of course in favor of a much higher actual antiquity—in view of the scarcity of surviving earlier objects of any description on which patterns are found. This motive also appears on pottery found in Egypt (probably of foreign make) of the Twelfth and Thirteenth Dynasties (excavations of Naville and Petrie).

The most remote form of the lotus border with which I am acquainted is that found on the Assyrian capital at p. 109. The Assyrian base above it, as associated with still more obvious motives on the same page, assists the solution of the motive on the capital. These two Assyrian pieces are the only ones which have ever been published of actual architectural members in Assyrian art and are borrowed from Place. All other instances are taken from relief pictures.

V.

But we have not yet finished with the protean transformations of the common lotus border of buds and trefoils. We have already noticed the



Greek Doric capital showing the rib of the "leaf" as derived from a bud.



Greek color pattern showing the rib of the "leaf" as derived from a bud.

incision on the "leaf" of the leaf-and-dart of the Erechtheum as a survival of the bud (p. 104, see also No. 6, p. 103). On the egg moulding from Naukratis the bud still appears in rec-

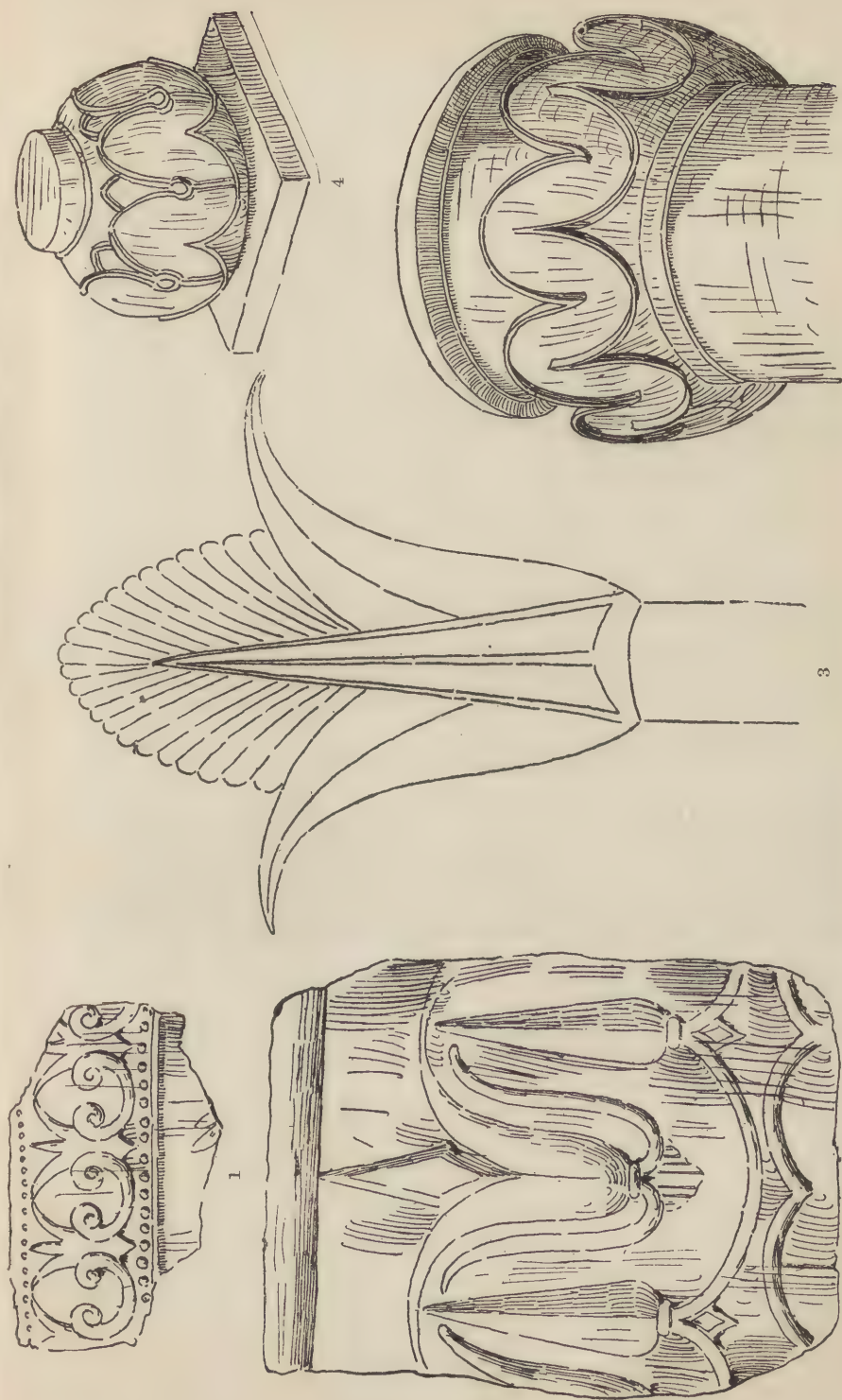


ILLUSTRATION FOR THE LOTUS TREFOIL AND REMOTE ASSYRIAN DERIVATIONS.—1, Greek bronze detail, Olympia; lotus trefoils erect (egg-and-dart motive). 2, Greek stone carving, Naukratis; lotus trefoils and buds; variant of the egg-and-dart motive. 3, Egyptian lotus trefoil, with palmette filling, of the type commonly carved on Ptolemaic capitals. 4, Assyrian base; lotus trefoils. 5, Assyrian capital motif derived from preceding, by elimination.

ognizable form (p. 104 and p. 103, Nos. 7, 9). In the flat leaf-and-dart ornament of the Greek color patterns the bud survives as a straight line forming the central rib of the leaf (cuts herewith).



Greek color pattern showing the rib of the "leaf" as derived from a bud.



Carved type of the leaf-and-dart (or leaf-and-tongue) dating to the 4th century B. C., showing the expanded form of the rib as derived from a bud.

By modern architectural students and art critics this form with a central rib has been universally mistaken for a leaf. The same mistake, as made by the Greeks themselves, explains the whole evolution of the leaf motive in Greek art. The Greeks of the fifth century B. C. had already transformed the simpler form mistaken for a leaf into one of elaborated design with serrated edges—witness the border moulding of the door of the Erechtheum, which is still in position (cut herewith.) The tell-tale dart or tongue still



Leaf-and-dart border from the door of the Erechtheum—derived from a border of trefoils and anthemions.

survives between these "leaves" to tell the story of the lotus trefoil evolution. In the Roman period of Greek ornament the frequency of leaf borders with intermediate tongues (p. 111) testifies to an earlier frequency in the Greek originals which are not as numerous in survival, but we are fortunately able to point to a serrated leaf border with the surviving intermediate tongue showing a derivation from the

leaf-and-dart, dating to the fifth century B. C., and from no less a place than the temple of Zeus at Olympia (see cut below).



Leaf-and-dart border found in the Pronaos of the Zeus Temple at Olympia. Supposed to have belonged to the pedestal of the horses of Cynisca.

According to these indications the introduction of the "acanthus leaf," so called, into Greek art was by way of these leaf-and-dart borders, whose evolution has just been described in connection with the egg-and-dart.

The tendency to realistic and decorative transformation in the direction of the leaf motive appears also in the anthemion as early as the time of the Erechtheum—witness the base of the detail herewith. By the fourth cen-



Anthemion of the Erechtheum showing the introduction of a foliage motive at the base.

ture B. C. the foliage detail had spread over the entire motive (see p. 98, Nos. 3, 4, 5). Instances from the Roman period like the details of p. 112 still bear the tell-tale signs of lotus trefoil origin, and these details are, in fact, portions of borders whose arrangement leaves no doubt as to

origin. The association with the anthemion is of course convincing proof of the traditional origin in another attendant illustration (p. 99). As regards the foliated treatment of the spiral scroll



Lotus spiral from Thasos showing an incipient stage of foliated decoration.



Greco-Roman leaf and dart border. From Pompeii.



Evolution from the above type. Greco-Roman border of Pompeii. From author's sketch.



Evolution from the above type. Greco-Roman. From cast in the Metropolitan Museum of Art



Counterpart to the above type, inverted. Greco-Roman base. From cast in the Metropolitan Museum of Art.

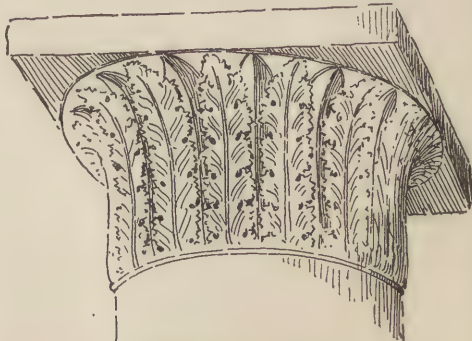
I must reserve my remarks until the simpler motive has itself been considered, but I introduce one illustration here to indicate an incipient stage of the foliated scroll which still shows its lotus trefoil. Later and more elaborated stages on p. 105).

We come now to the Corinthian capital, whose earliest perfectly defined example is that of the Choragic Monument of Lysicrates (334 B. C.). In the capital of the Choragic Monument the volutes are still the essential feature of the capital and the leaves are an afterthought—an overlay. That the Corin-

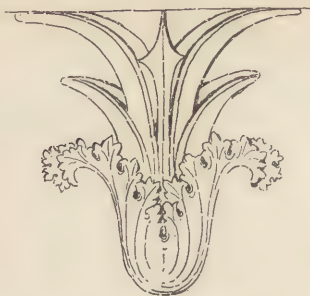


Corinthian capital of the Choragic monument of Lysicrates.

thian capital is in these volutes an evolution from the Ionic is perfectly clear when we once grasp the fact that the Ionic volutes were originally parted in the Ionic capital and that their upper line of union was a highly conventional transformation. When capitals with separated volutes like those of page 91 are seen not to be departures from the traditions of the Ionic, but to be the most exact survivals and perpetuations of its earlier forms—then the capital of



Undated capital at Jerusalem.



Foliaged lotus from Thasos.



Foliaged lotus. Detail from a carved border in the court of the Naples Museum. From author's sketch.



Foliaged lotus. Detail from a carved border in the court of the Naples Museum. From author's sketch.



[Foliaged lotus. Detail from Renaissance stone carving.

the Choragic Monument becomes simply a decorative elaboration of them.

We come now to the leaves of the Corinthian capital. Were not their prototypes found in the traditional ornament of the leaf-and-dart type (like the Olympia moulding, p. 110), or were they seized off-hand from visible nature? If so, it was the first abrupt step ever taken in Greek ornament outside the line of traditional evolution. We are able to fortify our position regarding the Corinthian capital by an illustration from Jerusalem of uncertain date (p. 111), closely analogous to the more highly elaborated leaf-and-dart borders.



Capital. Tower of Andronicus Cyrrhestes.

As regards another primitive form of Corinthian capital, viz., that suggested by the upper part of our illustration from the Tower of Andronicus Cyrrhestes, in which the leaf appears as a tongue or rib of simple outline—there is an



Egyptian basket capital; from Wilkinson.

Egyptian capital of the basket form which furnishes an obvious suggestion. Take the color pattern of erect lotuses on this Egyptian capital and incise it and you will produce the simple

leaf pattern of the primitive Greek bell capital. The spaces between the lotuses will appear as leaves or ribs after incision of the former. There is no surviving actual example of this Egyptian capital, which is copied by Wilkinson from a tomb painting. I am inclined to lay considerable stress on this suggestion. From this point of view the Jewish capital already illustrated (p. 111), and its significant location in relation to Egypt are also interesting.

The matter of this section will carry most weight with those who are best informed as to the gaps in the record for original Greek architecture, and who are best informed as to the strict lines by which the styles of Greek decorative art are limited according to the sequence of periods. Although the simpler motives are all continued in the later periods a given amount of elaboration always implies a given date, before which that elaboration was unknown.

According to this sequence of evolution every expert can differentiate the art of the sixth century from that of the fifth, the art of the fifth century from that of the fourth, and the art of the fourth century from the Greco-Roman.

When this gradual evolution from decoration in flat to higher and higher projection; ending in the late Roman undercutting; from the plain and simple to the decorative, from the decorative to the highly ornate and complex—is once grasped and understood, then the gradual steps by which the simpler motives of early Greek art were transformed and modified into generalized floral and foliate forms, become a part of the axiomatic matter of the history of art. The anthemion (p. 110) of the Erechtheum, the leaf border of the Erechtheum and the leaf-and-dart border of Olympia (p. 110) all demonstrate the initiation of this movement a whole century before the Corinthian capitals of the Choragic Monument which are the first to show an isolated and distinct so-called acanthus. Meantime the anthemions of the Anthenian tombstones illustrate a farther advance in the same foliating treatment (p. 98). The leaf borders of the Greco-Roman period, apart from the Corinthian cap-

ital are *all* demonstrably evolutions from the simpler leaf-and-dart as proven by the survival of the dart or tongue—see the illustrations of p. 111.

The question then which I leave to the expert to consider, is whether a typical foliating treatment, more and more serrated, more and more elaborate, gradually penetrated into Greek art by way of the leaf borders whose lotiform evolution is incontestable, or whether



Proto-Corinthian capital of Asia Minor.

aside from this progressive and traditional movement the leaf of the Choragic Monument sprang into being as the first instance of wholesale and unmitigated realism which Greek ornament at that time could illustrate. If the acanthus of the Corinthian capital be really an acanthus to start with, it is a surprising anomaly in the history of Greek art. But a still more surprising



Proto-Corinthian capital of Phigalia; about 430 B. C.

thing would be that it never is an out and out acanthus excepting when it appears on a Corinthian capital. Its appearance without the intermediate tongue might be explained as one more decorative elaboration of a lotus Ionic evolution (for at bottom we have seen that the Corinthian capital is Ionic). If the acanthus sprang into being as an independent motive, why do we not find it independent elsewhere, aside from the Corinthian capital? Considering the Corinthian capital as an evolution from the Ionic, we may assert that there is no

case in Greek art in which an acanthus pure and simple is found independent of a lotus motive, and no instance outside the Corinthian capital (however its leaf may be considered) in which the motive is not a lotus motive, transformed by a foliating decorative evolution. On the whole I consider the question to be settled by the Proto-Corinthian capital of Phigalia, which dates a hundred years before the Choragic Monument, whose leaf is evidently the predecessor of the leaf of the Choragic Monument and whose leaf is palpably not an acanthus (p. 113).



Proto-Corinthian capital of Delos. From Blouet.

The capital from Delos is a very curious and very important illustration of Proto-Corinthian evolution. I am doubtful whether the drawing, as made from the broken original, would not have been a better one if the artist had been familiar with the form of the double lotus, whose horns project on either side over the central smaller leaf

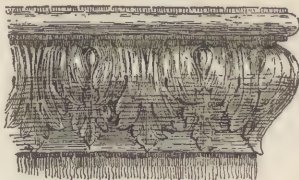


Proto-Corinthian capital of Messene. From Blouet.

anthemion. It is not clear to me whether an entire double lotus has simply been damaged by breakage and the artist has finished off the drawing in a rather crude way along the line of

breakage, or whether these curious horns are exactly represented from the original. In either case we have a clear case of anticipation of the arrangement formed on the capital from Messene and a clear case of lotus transformation (in the capital of Delos). The Proto-Corinthian capital from Phigalia, dating about a century before the Choragic Monument, is also a highly important piece of evidence. Its leaves correspond, in their primitive simplicity and lack of elaboration, to the leaf of the Erechtheum border of about the same date, that is of the border on the door (pp. 110, 115). The capital of Phigalia is otherwise a clear case of Ionic transformation, when the original Ionic is once understood as having had parted volutes.

I shall close this argument on the acanthus by calling attention to the three coping motives from Rajpootana



Hindoo coping motives from Rajpootana; arranged to show the evolution of the acanthus motive from the leaf-and-dart.

as illustrating the evolution of the acanthus motive from the leaf-and-dart. The publication from which these motives are taken is a colossal and astounding monument of the dominance of Greek details in India through Mo-

hammedan Arab and Buddhist transmission and for the relations of India with the Greek States of Bactria.* We will, however, consider these motives without reference to their interest as being from India and as we should if they were actually themselves Greco-Roman, for in Greco-Roman art they all have their exact counterparts. The evolution which these motives represent is a clear one; the survival of the simpler motive besides the elaborate outcome is already familiar to us. These three borders represent the evolution which took place in Greek art during the fifth and fourth centuries B. C., and are all perpetuations of motives dating from that time for which we are able to show counterparts and equivalents within the limits of that time.

Although the transformation effected is a somewhat obscure one on account of the deficiency of a large number of monuments of the original period we are able to say that there are two elements to be considered in this evolution: First, the lotus border with anthemions is an important factor, as represented by the Erechtheum door border (p. 115).

I have repeated here the illustration of this Erechtheum border in order to connect it with a slightly antecedent stage of evolution as represented by a border from the Island of Thasos. I do not claim an earlier date for the Thasos border, I only point out that its original ancestor precedes in evolutionary order the Erechtheum border.

The "acanthus" developed from such a border of alternate lotuses and anthemions. Second, the multitude of simpler leaf borders in early Greek art represented by the leaf-and-dart motive (surface or flat phase of the egg-and-dart) assisted the evolution. Once for all the leaf was there; how far that leaf should be serrated and elaborated was a question of taste and this taste was a question of period.

The time of the Corinthian Order after 330 B. C. was the time of opulence and luxury and decorative elaboration. It is consequently the time in



Typical border of anthemion and lotuses. From Ægina.



Evolution from the type above. From Thasos.



Evolution from the type above. Door moulding of the Erechtheum.



Evolution from the type above. Greco-Roman. From cast in the Metropolitan Museum.

which the acanthus phase of the typical leaf was the one largely preferred. But side by side with it continued to subsist the more elementary forms of the same motive, among which the egg-and-dart is not less curious and not less apparently remote from the original form.

I must add that most of the drawings within the limits of this section were prepared by Mr. John W. McKecknie

*Jeypore Portfolio of Architectural Details, by Jacob. Quaritch, 1890. Published under the patronage of His Highness the Maharajah of Jeypore.

for the Grammar of the Lotus but that its press-work was too far advanced to allow of their use, after they were made. I did not consequently consider the acanthus in the Grammar of the Lotus and therefore also omitted from that work any mention of the Corinthian capital, considering that it would

be impossible to treat its otherwise simple problem without reference to the leaf enrichment.

My first announcement of the lotiform origin of the acanthus leaf motive in Greek art was made in the first Paper of this series and this is the first publication of the proof.

Wm. H. Goodyear.

(TO BE CONTINUED.)



GREEK MELIAN VASE, 7th century B. C.; Athens; showing spiral scroll variants of the anthemion.

RAYMOND LEE.

CHAPTER XIX.

UNREST.

HITHERTO Raymond's curiosity about his father had not begotten the slightest inquisitiveness concerning his parent's appearance. Even a desire to educe by mental photography a portrait, however vague, had never troubled him. In his cogitations so far, his progenitor had been for him merely a vague personality, the centre of an unpleasant, dubious set of facts. His mother's persistent reticence about the past, at the time the boy's mind was furnishing itself with its beginnings, joined to the fact that when curiosity concerning his parent was evoked the interest aroused centered itself violently in a certain set of actions rather than in the man partly accounted for Raymond's ignorance. But only partly.

For the rest, Lee willfully closed his eyes. In adopting an attitude of hopelessness concerning his "prospects" in life, those immense possibilities which fill in a young man's outlook until he is thirty, Raymond deliberately turned his back on his childhood—purposely exiled himself from interest in it as one might from one's country to which return is become not only impossible but unpleasant. But though the door was closed in this way it remained visible, and every glimpse of it insistently suggested that there was something behind it. Despite Raymond's exaggerated sense of implication in his father's fate there was nothing morbid in his temperament. His nature reacted energetically against the demons of depression, in struggling with which we all waste so much of ourselves. The

wind, however, blows whither it listeth in the memory as in the world and strikes some tone from whatsoever it toucheth. Despite his efforts a sad fretting note rose frequently in Raymond's ear claiming the audience he refused it. The defeated association with Marian awakened it with painful plaintiveness, and Pulling's off-hand suggestion that the face now twice seen might be his father's, intensified it.

Was that ferocious, fear stricken face his father's? Raymond asked himself again and again. What was the background to the apparition? And of the moment and the occasion when this inexplicable visitor thrust himself into an obscure corner of his mind, how much was it possible by search to discover? Or, and the thought occurred to Lee repeatedly as an anti-climax to his perplexing speculations, was this suggestion of Pulling's about suspended memory, after all, nothing more substantial than other vagaries with which that eccentric individual sported? This possibility invariably upset Raymond at the point of determining upon action—a point at which he found himself several times during the twenty-four hours succeeding the conversation in the forest.

That Sunday night he tossed upon an uneasy bed, searching for some firm conclusion as to the value of Pulling's theory. In the course of their talk Pulling had declared emphatically that the face could be related to no ordinary event in his career.

"The ordinary doesn't return in that extraordinary way. Follow it up Lee, you never can tell into what strange places this sort of business leads one. It's great fun."

Raymond was doubtful as to the amount of pure amusement investigation of this particular matter would yield him. The old fear revived that search into the past would ultimately lead him into unpleasant discoveries. He shrank from certainty.

When Raymond called at the post-office on Monday morning, for letters, he had succeeded somewhat in checking the force of the backward drift of his thoughts and had partly brought himself around to his former position of sturdy acceptance of his situation as he found it, when the following letter again cut the ground he was standing upon

from under his feet. As soon as he saw the postmark, and the familiar handwriting of Mr. Wart on the envelope, he was aware that peace of mind was threatened :

“MY DEAR BOY—

“The grateful news—can you imagine how we have welcomed it?—of your whereabouts reached us this evening in a letter from Mr. Winter. Bless him for it. I cannot tell you how miserably empty the hours have been for us since your departure. They are terrible, these affections, when they turn against us and are no longer our companions, but empty-handed supplicants. The Princess’ cheek has become pale and her old sweet seriousness in which were blent the warm, changeful colors of her life is blanched to a white sadness which I am sure would pain you to witness. As to the old man, for him life is again pressing under foot the old bitter grapes.

“When we first found ourselves forsaken we agreed like children to ‘make believe’ that you had left us for only a little while. We said you would be back again in a short time. Every evening the Princess came to see me and always we soon found ourselves talking of you as though your being out of hearing for a little was an opportunity and excuse for freer speaking about you than usual. This fiction would cheer me up, she thought ; but though we struggled to be gay with one another the attempt brought little comfort. It did, however, bring the old man’s heart so close to her’s that the two touched, and I felt how deeply her’s was beating for you. The effort at delusion came to an end dolefully one evening when she sobbed herself to quietness on the old sofa, confessing to me that she loved you even in those early days in St. Michael’s. I told her everything of your past. I ventured even to speak of your affection for her and added that you had left us because of the past. She looked at me through her tears and cried, ‘As though it mattered.’ Ah ! sweet Princess, the old man could bow himself before you to the hem of your garment. When I showed her your last letter she begged me to permit her to keep it. It will be a great wrong, my boy, if you continue in your present course, for truly it is painful to mark the change that is working in her you love—the growth of a sad constraint, a certain air of hopelessness.

“She was with me when Mr. Winter’s letter arrived. It chilled in places. The urgency with which he begs us to appeal to you to return seems to indicate an obstinacy on your part to follow your own way. Surely that cannot be Raymond? You *must* return to us. The Princess her-

self, without saying one word to me beforehand, purchased the ticket which I inclose in this for passage on a steamer sailing from New York on the twentieth of next month. When I asked her what message I should send to you with it she answered, sadly :

" 'Only tell him to please forgive me being officious. I bought the ticket fearing he might wish to return and not be able to.'

" 'Could she say more? Certainly I cannot add anything to urge you homeward. Need I say the old man's heart calls you; but an even greater love bids you come, and I can only hope that its supplication will prevail should my prayer fail. Send us one word, Raymond, and then come to us. God bless you.'

When Raymond, refolding the letter, paused for a moment to gaze affectionately at his old friend's trembling signature, he felt conscious of the fact, without at the same time facing it squarely, that he had commenced to surrender. True, he did not definitely acknowledge capitulation, it was a matter yet to be thought of seriously. He would not permit himself to bound in one leap to the conclusion he foresaw. His judgment was to be forced to travel at a slower pace than his feelings; but, despite himself, those feelings were ahead of his decision exulting in the possession of long deprived freedom.

Raymond was happy. He read and reread the dwarf's letter. Each perusal intensified the melody of the love message it contained. It seemed to chase away the old doubts. "Why had he ever allowed himself to be so tortured by them," he asked. "If Marian could view that past without shrinking from it, as a sad affair, no doubt, but nevertheless as an affair ended, surely he must have been grossly exaggerating his relation to it. Such consequences as it had had for him were they not entirely of his own creating?" He recalled to mind that no one of the few that knew his secret adopted the view of his position that he had taken. Mr. Fargus had endeavored to turn him from it as unreasonable, Mr. Wart had done likewise, and now came Marian with an even more personal and interested judgment to the same effect.

But might they not be wrong? They were interested judges. There was the danger. Our interests are capable at all times of making ground for themselves to stand upon.

"I must decide for myself," thought Raymond, but at the same time he felt that his decision was already made; and he was happy.

And happiness, which is to be on good terms with life and the world in which we move, put Raymond for the rest of the day into a delightful intimacy with his surroundings. Ordinarily, human nature, as exhibited in *Catch-On*, was genial and instructive, chiefly upon beery lines; nevertheless it revealed new points for interest and sympathy under the sunshine in the young man's eyes. Its crudity even, which had been so depressing, became less of an irritant, more a mere phase of the place. Raymond's discovery of a road that promised departure from the town beautified it.

But the forest, the deep, silent forest, where the long aisles of trees seemed to lead in every direction to green-lit, mysterious haunts, where each step inward was attended by a sense of withdrawal from the world to one's own intimate self, it yielded to Raymond the finest sympathy with his newly-found happiness. He passed the afternoon wandering in the woods while his thoughts circled about in the new prospect before him. Every sound became suggestive and passed as a voice into the dreamy atmosphere of the young man's reverie, a woodpecker's staccato hammer on a hollow tree cried "Re-turn," "Re-turn," and a bluebird's plaintive call to its mate was laden with his name.

"Return, why not?" was the result of his cogitations. "The future is not all clear; but like a road in a fog will it not open before me as I proceed?"

Raymond decided that he would go to Pittsburgh and talk the matter over with Ralph. It was Ralph's letter that had disturbed his determination to keep the seas between himself and Eastchester. Raymond would have started by the train that very night for Pittsburgh but there was the appointment with Pulling. He had promised to be with him at six o'clock to prepare for the clandestine visit to the Fluke well. At that moment Pulling, in a great state of excitement, even for Pulling, was hunting for him everywhere. The idea that Lee was in the forest ruminating over a love

affair never occurred to Pulling, who was greatly agitated by the news, obtained through a devious channel, that the well would be "drilled in" that night.

CHAPTER XX.

AT THE FLUKE WELL.

IT was after eight o'clock when Raymond and Pulling stole out of the boiler-shed of the Jim Crow and entered the forest.

Every circumstance of that expedition impressed itself so vividly upon Raymond's mind that he was able, afterwards, to recall each successive rhythm of the changing current of sensation with which—the metaphor is scarcely too violent—he was borne along. There are moments of mental elation when the feelings are so tense that they almost make their own music and move as they never can in the denser atmosphere of the ordinary to infinitely subtle suggestions from things. The clumsy senses, usually of so monotonous expression, then acquire an ethereal sensitiveness and become musical strings of exquisite delicacy, so that mere perception is a sufficient touch to set them harmoniously vibrating.

At the starting out that evening, as Raymond entered the forest, the cool, scented exhalations from the earth set his pulses moving to a quicker measure. The air was instinct with life. The sensation that every leaf was expanding in the evening freshness was irresistible. A faint green luminosity amid patches of darkness lingered under the over-arching branches, the last melancholy presence of the dying twilight. Here and there in the vistas of the forest colonnades the purpled crimson of the western sky flared in dusky bars or burned in fire-like halo. The forest presented a sombre, solemn, grotesque air, as though the trees imprisoned, enchanted, metamorphosed by the light were, in the darkness and secrecy of the night, assuming one by one their towering human forms to meet in god-like conclave.

Once or twice a lone note of a bird filled the quiet with sad, lingering sweetness. After a quarter of an hour's tramp the only sounds Raymond could hear were those that arose from his and his companion's footsteps.

Pulling had elaborated an order of tactics for the expedition. He explained at the outset that to reach successfully the object of their nocturnal sortie it was necessary to avoid it.

"I've been studying this business," he continued, showing Raymond a hieroglyphic-like chart of his own manufacture. "That spot, there, is the Fluke, and that circle—not the inner line, *it's* supposed to be rubbed out—but the thick one, is the boarding around the well. If we went straight for it from this point we would walk right on to it in full view. We couldn't slide from tree to tree without some of those fellows getting on to us. But"—Pulling screwed up one side of his face, a proceeding which Raymond was expected to regard as a wink of intense slyness—"on the other side—the off side—their stockade almost tumbles over into Little Coon Creek. I've been there reconnoitring. It stands on the very edge of the bank, which is about ten feet high. The whole country slopes away from the north side of the well. My scheme is to circle around, strike Coon Creek, then steal along the high bank until the well is right over our heads. Then we'll creep up and mine a hole somewhere to peep through. See? What do you think of it—ain't bad, eh? Been working at it for a week. Come on; not a word. This damn night air is like a telephone. Wish it was raining."

The forest darkened, puffs of cool air became more frequent and suggested to Raymond the hurrying by of some nocturnal wanderer. With each step forward a sense of the mysterious deepened. It was easy to fancy as the gloom deepened and the outline of objects became blurred against a black background that the two were in reality descending into the earth. Here and there where the foliage opened and revealed the stars the heaven appeared at a greater altitude than ordinary.

Pulling groped along in the lead. The something uncanny and supernatural in the man never struck Ray-

mond so forcibly as it did as he followed him almost step for step. Not a word was spoken by either, but once or twice when Pulling feared his companion had lost touch with him he uttered a low breathing through his teeth, not unlike the sighing of the wind.

After more than half an hour's tramp—the pace was necessarily slow—the creek was reached. The two slid down the bank boy fashion, the earth yielding under them, and then began to skirt along the creek side in the direction of the well. Fortunately there were only a few inches of water in the Coon, the bed of which was wide and tortuous. Indeed, only after heavy downfalls of rain was it ever completely covered. Still, Raymond could hear it purling over the stones and occasionally he found himself over his boots in water, a warning to keep a higher foothold on the sloping side.

Progress in the oblique attitude thus necessitated was particularly slow and arduous. The detour they had undertaken made the distance to be traveled nearly three miles. Raymond was painfully fatigued and trembling in all his lower muscles, when Pulling came suddenly to a halt, stopped by a faint yellow reflection of light amid the trees high above them a few hundred yards away.

Raymond discovered that his companion had halted by tumbling upon him. Pulling in great excitement hissed profanity.

"Crawl," he whispered. "Low down, keep in the dark."

Pulling dropped on to his hands and knees. Raymond followed his example. In this way they approached the well. Motion in the lizard fashion is anything but easy or pleasant. The declivity of the bank perpetually threatened an upsetting—the tangled roots of trees and shrubs, interwoven with climbing plants, dead leaves of innumerable summers and fallen branches and twigs formed painful impediments that tore the clothing and lacerated the hands. Repeatedly the earth gave way and rolled down into the creek. At each of these mishaps Pulling swore violently. He was excited almost to frenzy. The situation certainly was thrilling. As they neared the well Raymond felt his heart beat with uncomfortable rapidity.

There was not only a large measure of excitement in the unusual circumstances of a midnight marauding for forbidden secrets, but the element of danger was also present. Raymond knew that without hesitation or compunction whatsoever the guardians of the Fluke well would announce with the contents of a shotgun their discovery of any surreptitious intruder. The "scouts" around the well were armed, and their guardianship was not an ornamental parade. Raymond's acquaintance with Lawler's enterprises of a similar character had demonstrated to him how carefully and violently well-owners kept the curious at arm's length from secrets of cash value. He was quite prepared to find Pulling's expedition come to ignoble or disastrous defeat.

But that worthy had either calculated well or was aided by good fortune. Step by step the two spies crept along without detection until they were within a few feet of the stockade around the well. Pulling stopped and lay prone along the ground in order to listen. The bank upon which they were stretched was completely in shadow, but from within the inclosure above them the light of the flaring gas shot up into the trees and made a wide illuminated circle on the forest foliage. The effect was weird, and suggested an Indian encampment and strange midnight orgies. The sibilant noise of steam escaping at high pressure drowned all other sounds. The air trembled and the leaves shivered with the vibration. The quiet forest seemed to be listening in wonderment.

After a few minutes' pause Pulling, followed by Raymond, began by cautious inches to move upward to the inclosure. He halted suddenly a dozen times as though warned of danger—on each occasion Raymond felt his heart leap into his throat. Not a soul was visible, however, and the noise of the steam, which buzzed louder as they approached it, was the only sound audible. One might have imagined the well was deserted.

At last, by stretching up an arm, it was possible to touch the rough boarding. Pulling signed to Raymond to find some point of observation without moving further, while he proceeded to the other end of the stockade. Raymond

watched Pulling intently until he dimly saw him fix himself in a perpendicular position a few yards beyond and raise his head cautiously above the brink of the creek bank.

When Raymond did likewise his eyes at once caught a thin line of light streaming from between the boarding a couple of feet above him. It invited inspection. He found a foothold on a projecting stone, and raising himself to the necessary altitude peered through the crevice.

Within the inclosure all was bright as in a theatre—the great wooden tanks like huge vats, the long boiler like a stranded locomotive straining and hissing, the complication of iron pipes of different sizes, some inert, others throbbing under pressure of the steam which leaked in little mist clouds from every joint, the long fountain of flame that rushed with a scorching sound from the top of its iron pole, and in the centre of the circle the guillotine-like derrick, suggestive of some outlandish fetish whose rites were celebrating. Entangled amid interlacing timbers was the “walking-beam,” resembling a huge battering-ram, nodding up and down with that tireless, regular, implacable motion which imparts to the movements of machinery a numbing power upon the senses. Raymond counted seven men within the inclosure. Several were clothed in yellow oil-skin suits like seamen prepared for a strong “sou’-wester.” They were drenched with oil, and as they moved about in hurried motions—plainly great excitement was prevailing at the moment—they reflected the ghastly brilliancy of the flickering light as though they were queer amphibious fishes. The strangeness of the scene absorbed Raymond’s attention instantly. The pressure of the purpose and circumstances of his visit, which a few moments before was like the tightness of cords about him, was relieved. He lost himself like a spectator of a play.

Clearly it was a critical moment with the actors within. Everyone was running to and fro with the confused movements of hasty preparation. Energetic gesticulations betokened speech, but the steam drumming in an empty tank, a device calculated to prevent interlopers gathering any information by their ears, completely overwhelmed the voices. Twice someone approached Raymond’s peep-hole

and caused him to withdraw his eye with a start that almost threw him off his balance, and once when a door not observed by him opened in the palings but a few paces from where he was stationed, to admit an armed man, Raymond experienced a sickly sensation of the danger of his position. He peered in the direction of Pulling, but at first, his eyesight dimmed by the brightness of the spectacle he had been gazing upon, could not discover him. The doubt followed :

"Was he alone? Had Pulling deserted him?"

The quietness of the forest seemed to press in upon him on all sides and to touch him as though it were a material thing. He shivered. Above, in the trees, the light pulsed and wavered at times as if the violence of the uprising gas would extinguish the flame and throw everything into darkness. The topmost part of the boarding was in a faint penumbra. Below, the air was black, save for a few points of light that burned through the inclosure. Kneeling to the ground Raymond peered into the darkness. After a time he discovered, at the spot where he had seen it last, the shadow of Pulling. Watching intently he perceived it was a busy shadow, a shadow whose members were moving beaver-like with intermittent moments of cessation.

"What's the fellow doing?" Raymond wondered. "Digging?"

A hazy light suddenly shot down the bank from *under* the foot of the stockade.

"Could it be that Pulling had the insane intention of creeping into the inclosure?"

Raymond marked the opening enlarge by the expansion of the light that passed through it. Then he clearly perceived Pulling bend his head down and thrust it up into the hole he had made.

"Fool," cried Raymond, inaudibly, "you'll be seen" (the judgment, let us say, did injustice to Pulling's circumspection, for within at that spot stood a tank).

Trembling with excitement Raymond quitted his foothold, intending to save his companion from the imminent discovery he foresaw so clearly.

Before he had taken a step, to his dismay, he saw the tall

plank that rose above Pulling's head oscillate for a moment, stagger like a drunken man, and then with a snapping of rending timber fall outward and crash down into the creek.

A flood of light poured out of the opening into the forest.

Raymond's first fear was concern for Pulling. Had the falling timber injured him? Disregarding caution, which he concluded had become useless, he cried aloud to his companion. No response came. The thought flashed upon Raymond that Pulling had been knocked unconscious into the creek. With a couple of bounds he reached the spot, now brightly illuminated, at which he saw Pulling last.

He was seized instantly by two men who leaped upon him through the opening in the inclosure. Before he could utter a word two pair of hands like vises gripped his arms. Raymond struggled fiercely to liberate himself.

"Let me go," he cried, breathlessly, "my friend is hurt."

"Damn your friend and you, you skunks," screeched a voice. "Bring him up here. Who is it?"

The enraged speaker evidently was the commander of the company. He stood on the brink of the declivity with his back to the light, surrounded by the well's crew. His features were invisible. Clothed in a black rubber coat with a crumpled slouch hat on his head he appeared as a dark silhouette against the flare of the gas.

Raymond's captors dragged their prisoner with brutal energy up the bank and forced him to a foothold on the brink, face to face with the master of the well.

"You skunking, prying devil," hissed the latter. "Let go his hands. Who in hell are you?"

"That's my business," replied Raymond, sullenly.

"You're business, eh? You're business! Are you prowling round here on your business, you miserable skunk?"

"I'm not interested in your affairs. I was with my friend and he's below there—dead, for all I know."

"Serve him right. Who are you? Damn you, tell me. I will know."

"I won't," cried Raymond.

"You won't!"

His inquisitor sprang at his throat and in an instant

the tightened fingers had almost choked him. The constricted blood pulsed violently in Raymond's neck.

Raymond struggled like a drowning man for breath. He freed himself for a second, and as he did so the light shone full into the face of his antagonist.

It was the face he had already seen twice as an apparition. The eyes shone into his, bright like copper, and with murderous ferocity. The distended veins on the forehead were like cords. The visage was purple with apoplectic rage. The high stockade and the forest—the actual background of the scene—vanished from Raymond's sight and was replaced by a large gas-lit room, the high windows of which were closely draped with heavy yellow curtains that were suspended under dark wood cornices with deep valances. Every detail of the furnishing of the apartment flashed into view—the marble fireplace with the great gilt glass over it, the bright steel fender around the grate, the ample expanse of carpet, dotted with patterns of big bunches of flowers, the chairs upholstered in yellow stuff, the pictures with their gold frames hung on the walls by heavy red cords, the huge wardrobe with a looking glass in the door of it, and the dressing table covered with china articles.

Standing before him and towering above him was a man dressed, not in a black waterproof, but in a light suit, whose terrified and ferocious face, peering into his, was the face which the light of the hissing gas had revealed to him that moment.

Then he heard, like a cry in a dream :

"Pitch him into the creek."

The room and the face were suddenly extinguished in darkness.

CHAPTER XXI.

THE SEARCH COMMENCED.

WHEN consciousness returned Raymond found himself in bed in one of the scantily-furnished rooms of the Catch-On House. The process of awakening was slow. It was like an emergence into the daylight, attended at the first stage by only dim perception of strange surroundings—indistinct outlines of dark furniture and hazy sunlight streaming in through a bare window—followed by more emphatic impressions that aroused the mind to questioning. Sensations of fever and thirst succeeded, then dull, hot-pains and a sense of exhaustion.

"What can I get for you, Lee? There, don't move about."

The voice was Pulling's.

Raymond endeavored to utter his friend's name as token of recognition, but the sound died in the intent.

"Don't try to talk. You're all right, except in one or two small particulars. Let me arrange your pillows—so. That feels cooler, doesn't it? Doze off again. You've got to sleep and eat for a fortnight, and you'll be all right."

Drowsiness again enveloped Raymond like a fog, and he heard nothing more of Pulling's whispering.

The term that Pulling had set for Raymond's convalescence coincided very closely to the period actually necessary for his recovery. It was nearly two weeks before he was firmly on his feet again.

"Say, Pulling, what was it that happened at the Fluke?" was one of Raymond's first inquiries as soon as his curiosity endeavored to re-establish relations between the present and that Monday night's experiences in the forest.

"They pitched you into the creek and you struck head first on a boulder," replied Pulling, laconically.

He was "getting up copy" for the *Eye* and was writing as usual with great impetuosity and an extravagant expenditure of ink, at a bare pine table placed in front of the only window in Raymond's narrow room.

"Where were *you*?"

"*In* the creek." Pulling made a stab at the ink bottle. He was intent at that moment upon "copy" and in no mood for conversation. Had it not been for Raymond's pale face in the chair opposite him his impatience would have exploded loudly. Raymond did not notice how busily occupied Pulling was. His own eyes were turned inward upon the scene at the Fluke well, and with an invalid's selfish indifference to the circumstances of others, he continued:

"Did that falling timber hit you?"

"No-p."

"I was sure it had fallen on you."

"It fell *over* me."

"How did you manage to get away before those two brutes could jump on you?"

"Slid down the bank."

"Then you saw what went on up above?"

"Yah."

But Pulling couldn't stand the interruption any longer; besides, the deeper Raymond probed into the events of that particular night the greater became the temptation for Pulling to discuss them. At last, dropping his pen, he turned around abruptly to Raymond:

"But, Lee, what happened to you? I saw you and that tall fellow in the slouch hat close in on one another, then you reeled as though you were drunk and suddenly collapsed. Must have given those chaps an awful scare—thought you were dead, I believe—pitched you like a log into the creek right where I was. But, gum! didn't the *Eye* give it to them, next issue. Wait 'till you see the story—three columns. 'Outrage upon an *Eye* reporter when seeking news in the Public's interest. Thugism in the woods.' That's the keynote of it. Made you a hero. You wouldn't know yourself. I had you tackle six 'Hessian hirelings,' that's the phrase I rubbed into them—good, eh? knock two of them down and were downed yourself only by a blow from behind. Lawler's immensely pleased. He's got his land, and the *Eye* had a complete 'beat' on the Fluke mystery. Great, wasn't it?"

"I don't know."

"Don't know? Say, Lee, you'll never make a newspaper man," said Pilling sadly. "You haven't got the journalistic faculty. But what I've been wanting to get at is what overcame you when you were tussling with that fellow."

"That face which I have told you of suddenly reappeared to me, but with astonishing vividness. In fact, it was so 'present' that I don't know whether the features I saw were those of the fellow who seized me by the throat, or of my visionary visitor."

"You don't say! That's interesting. I knew something must have happened to you. It was the face you've seen before, eh?"

"Yes, the same, but with some changes which I can't quite describe. Besides, this time the entire man was visible and not his countenance only. He stood in front of me so that I could see him from head to foot. Even the texture of his skin was apparent. Had he not a light suit on I would say positively it was the man who had hold of me."

"To be sure, the chap who had hold of you had a black rubber coat on. I remember distinctly."

Pulling's voice was rising with excitement.

"Moreover," continued Raymond, "we were both in a large, gas-lit room, the walls and furniture of which were plainly visible. You know on former occasions I saw nothing but the fellow's face."

"Yes, yes. Say, Lee, give me a description of everything in detail. Let me get it all down on paper with a diagram. I'm damned if this ain't interesting."

Pulling seized a pad of paper and jotted down with great eagerness Raymond's account of the visionary chamber and its contents.

"Go on, what else?" Pulling reiterated whenever Raymond paused in his story.

"You have every detail now that I can think of," said Raymond finally, and then Pulling sat back in his chair and read aloud what he had written, pausing here and there to add a word necessary for clearness or connection.

"It's photographic. Lee, you *must* have seen this room. You don't get things down quite so fine in dreams. Besides,

the furniture and get-up of the room is old-fashioned. It's all in the style of twenty years ago."

"Not only have I no memory of ever having been in such a room," said Raymond, "but save by breaking into some house, I don't know where I could look to to find such a room. Then, too, there's the man. I have never seen any one like him. The people I have ever known I can count on my fingers, and their faces are as familiar to me as yours."

"Well," said Pulling, "then it must be as I said the other day, your memory is yielding up some ghost of your childhood."

"Perhaps, but my memory is clear about everything as far back as, well, say my third year."

"You think so, but how do you know? Is there any one living well acquainted with your infancy?"

"Ye—s, one person, I think, a Scotch woman, my nurse."

"Good. I have it! Why not send her this description and ask her if she can recognize the room and the man."

Raymond hesitated. He trembled at the idea of making a test that might confirm suspicions that had troubled him sufficiently of late.

"What's the use, Pulling? If I were to trouble myself about every vivid dream I have I might as well turn psychologist at once."

"Pshaw. No one's asking you to turn anything. We're not talking about your dreams, but of this particular and, you will admit, peculiar visitation or vision, or whatever you choose to call it. What's the old woman's address. Let me send this description to her. Bet yer you wont call it a dream after you have heard from her. See if my theory isn't right. Now, don't be obstinate, like Lawler."

Raymond hesitated.

"What harm can the inquiry do?" persisted Pulling. "Perhaps, though," he added, "you have some reason for objecting."

"No, no," said Raymond, quickly, unwilling to acknowledge even to himself that his disinclination sprang from

anything more than the idea that Pulling's plan was an idle one.

"Well, then, sail in. I'll write for you if you'll dictate."

"All right," said Raymond, reluctantly. "It's a foolish business. However, the letter will have to go to Eastchester. Address it to Isaac Wart, to be forwarded. I don't know where Mrs. Stewart is living."

The letter that went out in the mail that evening read as follows :

"MY DEAR FRIEND—

"Your letter and its inclosure reached me a few weeks ago. It is still unanswered, partly because I have been ill. I am not quite myself yet, and this note is written by a friend who is so kind as to play amanuensis for me. Don't worry, however, about me. The worst is over, and in a few days I shall be quite myself again. I will then write you about my plans for the future, and in that way will answer your last. Don't think me unkind if for the present I say nothing about what I know is uppermost in your wishes. You almost tempt me to surrender, dear old friend, but not quite. What I want you to do for me now is this : Ask the Princess to be kind enough to find from Mr. Fergus the present address of my old nurse, Mrs. Stewart, and then send the letter which is inclosed to her, and her answer, when it is received, to me. As I cannot say all I want to say to you at present I will say nothing beyond promising you a long letter and much news in my next, which I will send you when I receive Mrs. Stewart's reply. I would like to tell you to remember me to the Princess, but I fear I had better not. However, give my love to Mrs. Finn and Mag, and, if you can, still think kindly of

Yours Unworthily."

CHAPTER XXII.

MARIAN'S LETTER.

RAYMOND had completely recovered from his mishap and had surrendered himself again to the empty dawdling existence of Catch-On correspondent of the *Weekly Eye* before an answer to the foregoing letter reached him from the other side. The dread of painful discoveries, of reaching at last that final certitude concerning his father's crime which he had hitherto obstinately shunned and which had troubled him for a few days after the letter was mailed had passed quite into the background of his thoughts when an envelope with the Eastchester postmark revived it again in an instant.

The address was in a woman's handwriting, unknown to Raymond. He weighed the letter in his hand, questioning whether it was best to open it.

"Why not tear it up," he pondered, "and not jeopard by what is after all an idle curiosity the present tranquility?"

He thrust the envelope into his pocket and wandered along the road towards Welltown.

It was midday. The fierce summer sun was scorching the dusty road. The still air was heavy with furnace-like heat. The grass and tangled foliage by the wayside were gray with dust which rose in puffs under the footsteps and filled the mouth with a parched gritty taste. The monotonous chirruping song of the crickets and locusts, so dry that one could easily fancy it was the heat becoming audible, was the only sound that the sun had not silenced.

Raymond tramped along until the sunshine made his eyes blink, and the burr of the insects and the throbbing of the heat seemed to have got into his head. The green shade of the silent woods was too inviting to be resisted. He turned off from the highway through a wide opening amid the trees and threw himself down on the brown-matted floor under a big pine.

The solitude forced his attention again to the letter. As he inspected the envelope the strange handwriting not only

tempted curiosity but seemed to taunt him with cowardice. The solitude gave him a sense of secrecy, suggested that the letter once read could be destroyed without anybody being the wiser of....

"Of what?" cried Raymond aloud. "How I persist in frightening myself with shadows."

He tore open the envelope and turned at once to the signature. The letter was from Marian :

"DEAR MR. LEE—

"Mr. Wart gave me your letter the other day with the inclosure it contained, and now when it can be answered begs me to write to you, which I am very happy to do, particularly if the news I send shall prove to be of any real use or comfort to you. We are, of course, quite in the dark as to its purport. I obtained, as you desired, the address of Mrs. Stewart from Mr. Fergus and then went myself to see the old lady, who is living comfortably with relatives in a little white stone cottage on the outskirts of Hastings. She was so delighted—everybody is so delighted to hear of you. I gave her your letter. While reading it she exclaimed frequently, 'Well! Well!' and when it was ended she turned to me much agitated and asked: 'How did he learn all this, Miss Pilgrim?' I was not aware of even the contents of your letter, but had I been I could not, of course, have answered her. 'Why,' she said, 'this is his father's bedroom in the old home, and the gentleman he describes is Mr. Ayres. How did he come by the knowledge, Miss? He was but a wee baby at the time.' Then she read me your letter, and her answer to it is, in short, what I have just stated.

"I hope you will not be displeased, but I must confess to you that Mr. Wart has told me everything about that unhappy event which occurred in your early childhood; and now that I have told you this, may I add that I sympathize with you more deeply than I can say, for I know how greatly you have suffered for a human error which I am sure God's justice will rectify in ways that we cannot divine. Mrs. Stewart went over the sad story with me. There is no doubt that the room you described in your letter was your poor father's bedroom where you frequently slept when a boy, and the man, a Mr. Ayres, a friend of your father's, who was with him on that terrible night of tragedy. Mrs. Stewart said, furthermore, that in her judgment the evidence this Mr. Ayres gave reluctantly at the trial was fatal. Of course that is but an opinion.

"I hope this information is as full as you desired. If there is anything more you want to know, or if there is anything we can do for you do write to Mr. Wart. The poor old gentleman misses you greatly. I wish I could prevail upon you to return. Eastchester is a small place I know, but I am sure it holds your affections, and are we not happiest where they are? The old bells that you used to listen to and said were so solemn and melancholy because they gave voice to the silent yearnings and sadness of the people that lived beneath them are chiming forth as I write. I am sure they would not have quite so plaintive a note for your friends were you here.

"Your friend always,

"MARIAN PILGRIM."

CHAPTER XXIV.

DISCOVERY.

PITTSBURGH is not a city that promises the visitor as he approaches it great satisfactions—other than those rooted in the pecuniary instinct—and, afterwards, when he penetrates into it, it does not disclose itself with delightful surprises. It is throughout a very sordid looking town. Its grimy buildings and its sooty atmosphere seem to be, in the one case the physical expression, and in the other the lugubrious exhalation of hard purpose. As the stranger wanders through the narrow streets he runs so frequently into the whirr of machinery and revolving belting, and at the same time catches so many glimpses through foggy broken windows, of the sparkling blaze of forges, that the thought comes not unnaturally to him that the town moves by machinery, and its inhabitants even are attached somehow to fly wheels and running gear and are forged with fire into relationship with one another.

Early in the morning of the day following the event spoken of in the last chapter, Raymond passed out of the sooty sheds known locally as the Pennsylvania Depot (pronounced Dee-po) and set his steps in the direction he had been instructed to take to find Ralph's home. He had to

proceed against the morning tide of humanity making for office and factory, and on the way his reflections took a sombre cast from the foggy air in which the morning sun was visible only as a yellow haze, from the sad-looking smoke-stained buildings and the hurrying preoccupied crowds. He had determined to find Ralph's house afoot, because the hour was early and he feared a prompt arrival at the Winter mansion would be untimely. Mr. Winter lived not in Pittsburgh but across the river in Alleghany.

"When you get over the bridge any one will direct you," he was told.

Across the bridge, however, he went astray, either through misdirection or misunderstanding. For a time he wandered aimlessly along quiet, empty streets, lined with stiff, sober red brick houses, trim and polished and lined up as on parade, seeking a clue to his destination at the street corners. But the names on the street lamps and house walls were foreign to him and gave no indication of Farragut avenue. He met a cheery old gentleman leaving his doorstep and inquired the way of him.

"Do you know the north when you see it?" asked the old gentleman, loudly. He was hard of hearing, but turned his ear and inclined his head hospitably to Raymond's question. "Well, my friend, right about face. *That* is north. Now, then, two blocks to the right and you are on Farragut avenue; and No. 904 lies north. You will discover how many blocks. A good walk, but not too much for a strapping young man like you. Tell Mr. Winter that old Paul Sutter directed you. You see I know 904. Good-day. You are welcome."

Farragut avenue is the plutocratic thoroughfare in Alleghany. Except at one end, where it touches the river and is socially polluted, none but the very rich reside in it. To have one's home "on the avenue" is among Pittsburghers an indubitable certification that one has attained the condition of American beatitude—millionaireship. On Sundays, after divine worship, the multitude promenade there, rendering processional homage to Mammon. It must be pleasant to watch the crowd bask in one's financial effulgence, and by those who can afford the luxury the pleasure of

witnessing the moving spectacle from an invisible outlook behind drawing-room curtains is accounted one of the advantages of "living on the avenue."

The street was very quiet when Raymond entered it. An occasional tradesman's cart, a whistling messenger boy drumming a stick from post to post of the palings as he passed them by, and a gentleman strolling a block ahead in the direction he was going, were the only signs of animation Raymond's eye encountered. The houses along the way—detached, surrounded with trim lawns intersected by orderly gravel drives and walks, constructed the greater number of them of a pale white stone—wore with their refulgent, obtrusive thick plate-glass windows decked with precise lace draperies, a stark, outward, ostentatious expression. Clearly the builders of them had an eye on the street. They were architectural too, if elaborateness that amounts to a statement of cost impressed upon each façade be architecture. Despite the deadly facility of the Renaissance for such purposes or, perhaps more strictly speaking, because of it, the monotony of the architectural exuberance became tiresome long before Raymond had counted his way north to No. 904.

He proceeded along the avenue slowly. A few steps after he had noted the number 868 inlaid in a particularly rich stained-glass transom over a heavy oak door, he found himself passing by the gentleman who had been sauntering ahead of him. As Raymond approached him the young man's idle attention was attracted cursorily to his closely-fitting suit of fine gray cloth, his broad shoulders, erect carriage and military step. His head inclined slightly toward the ground indicated that he was busy with his thoughts. Raymond paused for a minute or two before passing him, deterred by disinclination to offer his own back to scrutiny similar to that which he had given the stranger's, but the thought of the silliness of acting from such a consideration quickened his pace. As he passed the stranger he threw a quick, careless glance at his face.

There could be no doubt of what he saw—the face was the one he had seen at the Fluke well and on two other occasions prior to that night's painful experience.

He halted suddenly, and to hide his excitement turned himself toward the nearest house as though to inspect it. The stranger, who apparently did not notice the abrupt manœuvre, continued his way. For a moment Raymond had to struggle for breath. Every drop of blood in his body pulsed violently. He stared blankly at the building in front of him and tried to collect his thoughts, but the result was only a blurred sensation of confusion. Moved by a blind desire to speak to the stranger Raymond hurried after him. Action helped Lee to think. What could he say to the man? he asked himself. The urgency of the question was painful, for he soon arrived within a few paces of the stranger, but could find no answer. Could Pulling's surmise be correct and the visionary face he had seen be that of the murderer? Then, was the man before him the Mr. Ayres whom his old nurse had declared was the person described in the letter he had dictated to Pulling? These questions flashed across Raymond.

The next instant, just as he was about to accost the stranger he was surprised to see him turn quickly from the street and ascend the steps of a large brick house, which he entered with a latch key. The door had scarcely closed behind him when Raymond, who followed after barely a moment's hesitation, rang the bell. The door was promptly reopened by a maid. Raymond was in a speechless condition. He stepped into the vestibule and stood there in awkward confusion. The girl surveyed him and then smiled familiarly.

"You're from the Oil Region?" she asked, in a soft Irish brogue.

"Yes," replied Raymond, in surprise. "I want to see...."

"Step in," said the girl, closing the door behind him. "Hasn't Mr. Vogel come with you? This way. You're to please take a seat in the library."

She ushered Raymond into a long, dark room, at the further end of which was a low, wide bay window that overlooked stables and the rear yards of houses on the street beyond. Raymond scarcely had time to seat himself in one of the heavy leather chairs and give a glance at the

massive mahogany bookcases, the regular lines of volumes in which had more of an ornamental than a working air, when he heard the footsteps of the master of the house descending the stairs.

Raymond had arrived at a vague decision to trust to accident and the inspiration of the moment to prompt him as to what to say in the coming interview. He arose to his feet.

"You are very late this morning, Vogel."

It was the voice of the man in the slouch hat whom Raymond had encountered at the Fluke well.

The speaker uttered these words at the threshold of the door. The next moment he was facing Raymond. Beyond any doubt it was the master of the well.

"Pardon me," he cried, embarrassed slightly, observing a stranger before him. "I have been expecting some one, and supposed you were he. The servant didn't give me your name. Pray be seated. What can I do for you?"

The speaker's manner, after the momentary hesitation, was frank and easy, that of a man of the world quite sure of himself. Raymond detected a slight English accent to his speech.

"My call," began Raymond, slowly feeling his way forward and struggling with an unconquerable trembling, "is—is—very—unexpected."

"Yes," assented the master of the house, eyeing his young visitor from beneath a gathering frown. "May I ask your name?"

"Raymond Brewer."

The frown vanished, and was replaced by a look of startled expectancy.

"Brewer? Brewer?"

Despite the tone of inquiry, the repetition of the name conveyed to a sensitive ear the faintest indication of recognition.

"I do not know you, sir," he added sternly.

"I am aware of it," said Raymond. "I have come from England. Your name is Ayres, is it not?"

The man's face, naturally rubicund, became purple and ashen, and he leaned a clenched fist for support on the table by which he was standing. The affrighted look in his

eyes, far from intimidating, emboldened Raymond to proceed. He felt that he was pressing towards the truth, and that Pulling's conjectures were correct.

"I have come to see you," continued Raymond, "about the murder of Noble."

A cry, partly despair, partly rage, rang through the house.

"It's a lie."

In an instant the man recovered himself.

"How dare you enter my house to insult me," he roared, advancing toward Raymond, who stepped forward determinedly, flushed with the conviction that his father's vindication was at last possible.

"Leave the house instantly, or I'll have you arrested," cried the master.

There were sounds of hurrying feet in the hall.

"No," cried Raymond, exultantly. "Don't talk of arrest. You are the...."

"Father, what's the matter?" cried some one as the door was flung wide open.

"For God's sake, hush," the master suddenly implored of Raymond.

The supplication was unnecessary. Speech was impossible to Raymond. In the doorway, gazing in surprise at the two, stood Ralph.

"Father! Raymond!" he cried, advancing toward them. "Why, what is this? Raymond, Raymond, what has happened."

Ralph seized Raymond's hand. Raymond broke down. The awful situation he was in was clear to him.

"Nothing, Ralph, nothing," he murmured. "I came to see you and—and didn't announce myself, you see. Am sorry for the mistake, Ralph. I have been sick lately," he cried, piteously. "I want air. I must get outside."

Winter, Sr., stood rigid as a man petrified. Ralph put his arm tenderly around Raymond.

"Sit down, old fellow. You're ill."

"No, no," cried Raymond, pushing his way into the hall. "I must get out."

The next minute he was in the street. Ralph was beside

him, hurrying to keep up with his rapid pace. "Ray, what *is* the matter, old fellow?" cried Ralph. "Halt for a minute. You are terribly excited. Come home and rest. Where are you going to?"

"Anywhere. Oh! Oh!" Raymond bit his lips in pain. "I must get out of here. I must take the next train to Catch-On. Help me, Ralph," he implored.

"Help you, old fellow, of course. But . . ."

"Don't question me for a minute, Ralph." He turned suddenly to his friend. "Run back will you first and tell your father I am sorry for—my mistake. Tell him that you and I are friends. Return quick. I'll wait for you here."

"You are making too much of some little error, Ray. Come back with me. Father will understand."

"No, Ralph. Hurry. I am in pain and must get back to Catch-On."

Ralph couldn't comprehend his friend's strange mood, and as he could not persuade him from his course he returned docilely with the message for his father.

CHAPTER XXV.

But the best is when we pass from out them,
Cross a step or two of dubious twilight
Come out on the other side, the novel,
Silent, silver lights and darks undreamt of,
Where I hush and bless myself with silence.

THE long, sweet English twilight was yielding its last fragrances and shadows and quieting sounds. The yellow rays of the lights in the Priory windows were stealing further and further along the darkening lawn. It had, indeed, grown quite obscure under the old apple tree where the summer seats were. The voices of the speakers had dropped into hushed tones in harmony with the evening silence.

"Ralph wouldn't leave me until the steamer was almost in motion. He insisted on my returning to you all," said Raymond.

"Poor fellow," murmured Marian, pensively. "It seems so long ago the day that I met him first."

Then she asked :

"So he has no suspicion regarding what really happened between you and his father?"

"None."

A long pause followed. Then Raymond asked :

"Now, Marian, that you know all, tell me frankly, do you believe I did right? The responsibility at times seems more than I can deal with."

A hand was placed gently upon Raymond's as for comfort.

"Ray, dear, don't doubt. Friendship didn't lead you astray ; it only helped you to do the higher duty. What greater obligation can you owe to your father than to do Christ's uttermost command to forgive and judge not? Oh, Ray, isn't it lovely to have turned away from man justice, which is such an imperfect and selfish measuring out of pains and penalties to God's mercy, which I am sure is to understand and forgive."

"And you are satisfied with me, Marian?"

"Ray, I love you ; don't doubt any more."

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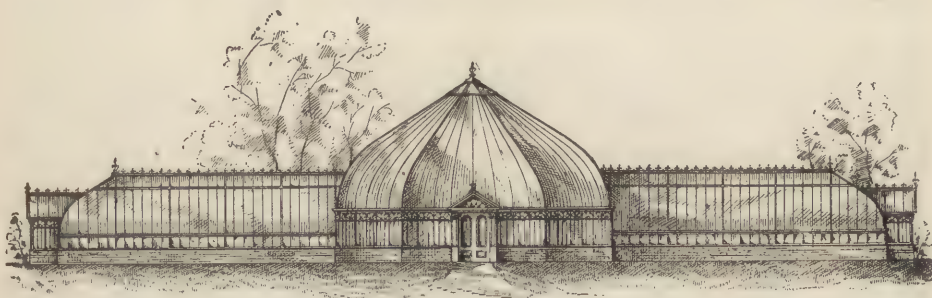


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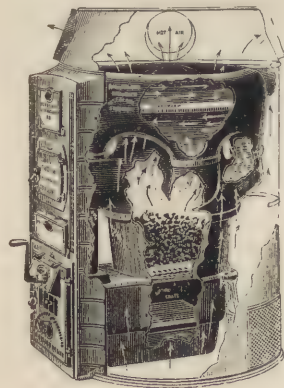
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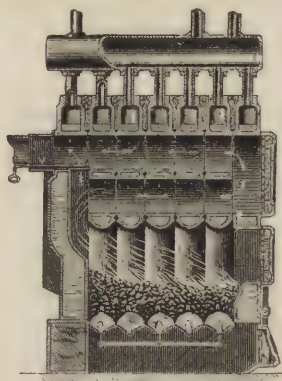
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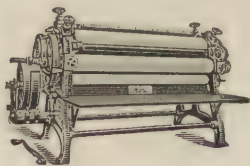
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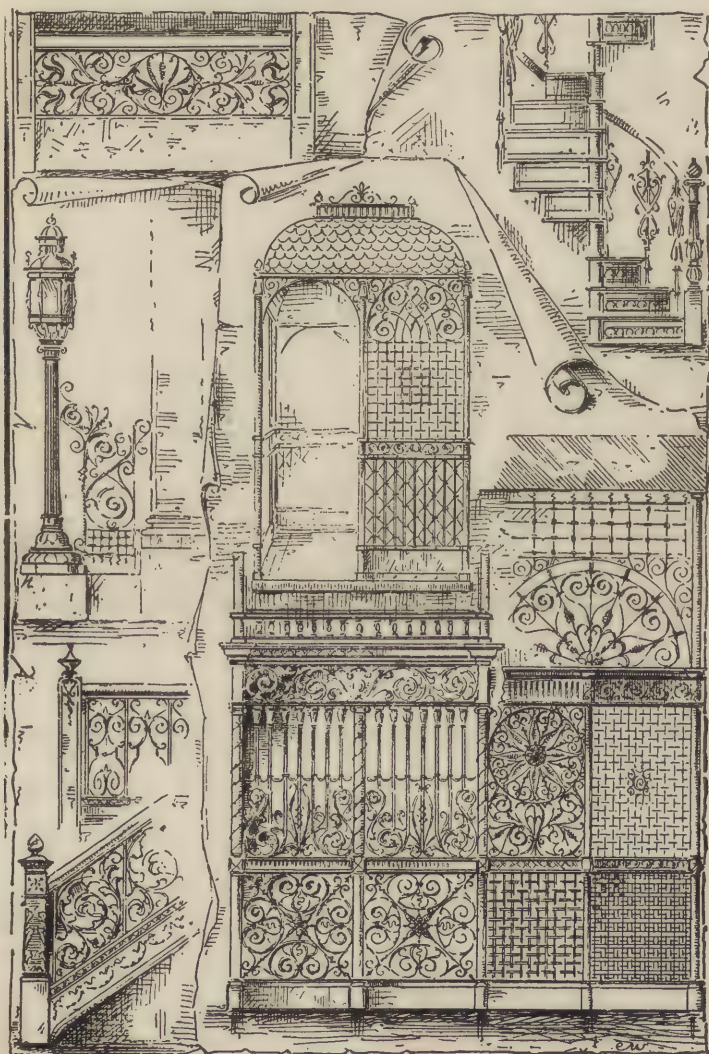
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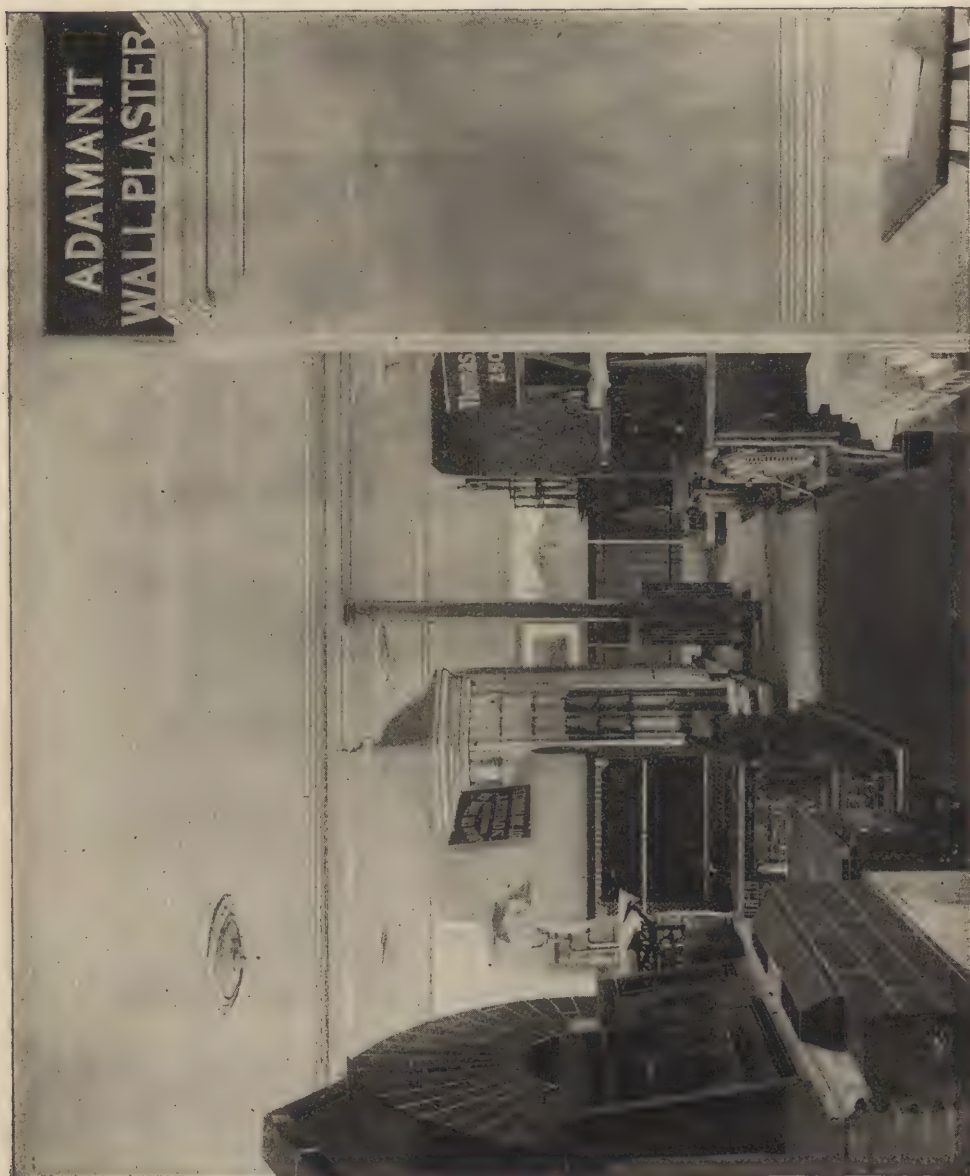
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THE ARCHITECTURAL RECORD.

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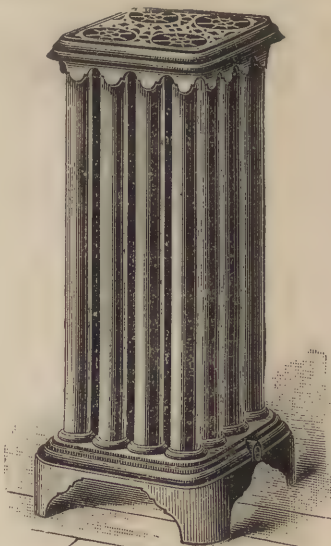
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SUGGESTIONS.



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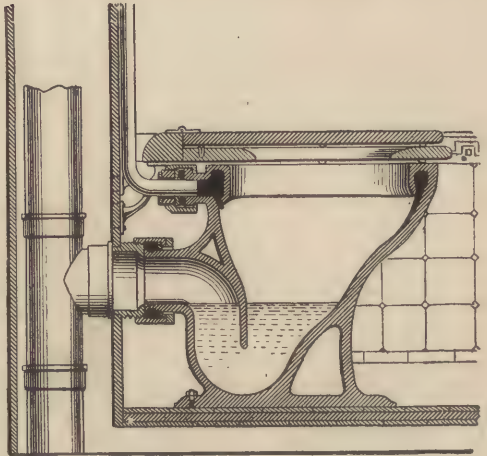
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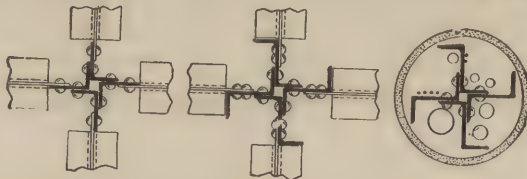
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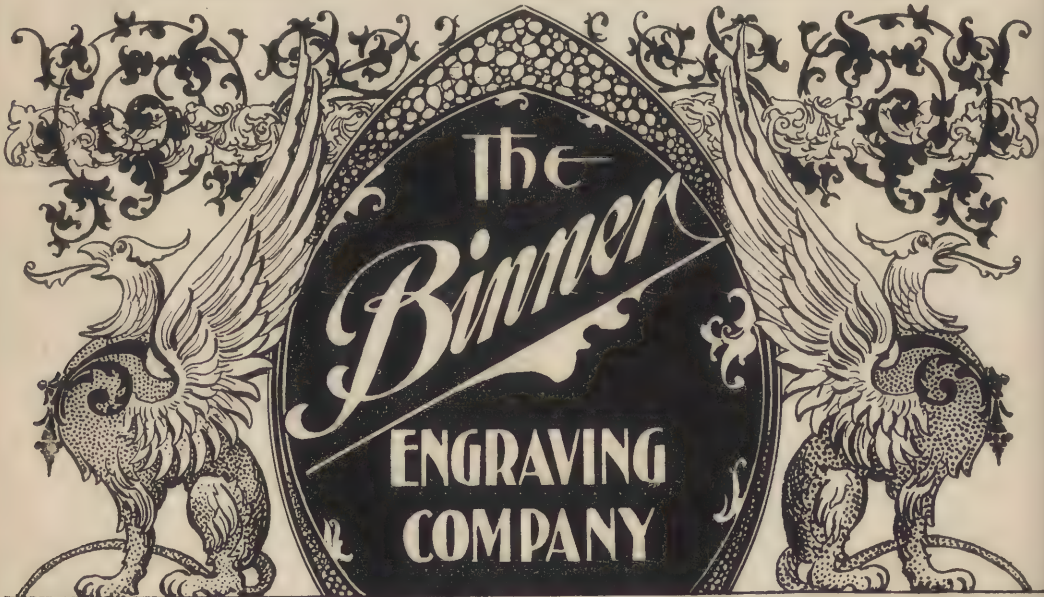
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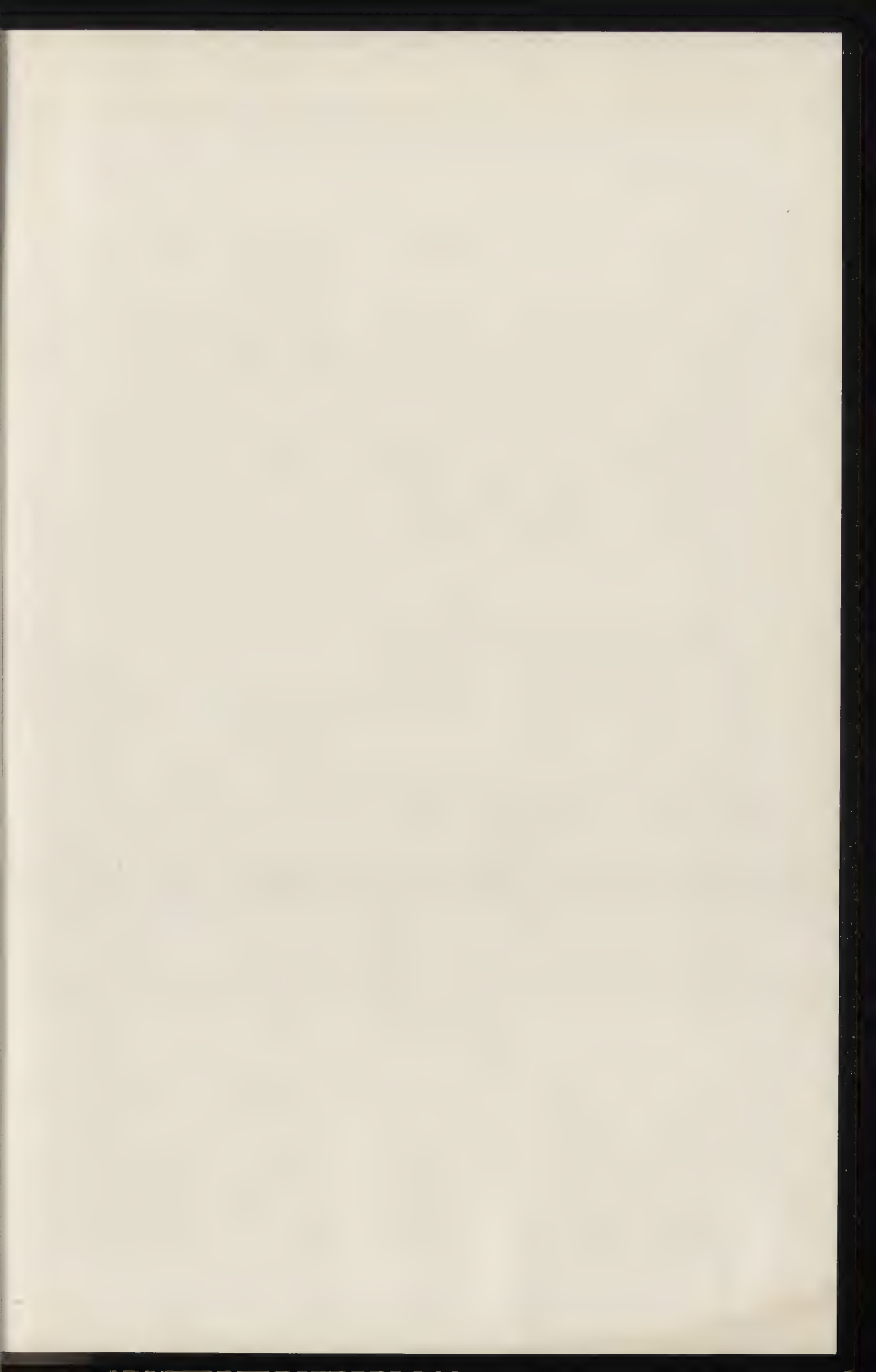
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No. 2.

COMPETITIONS—THE VICISSITUDES OF ARCHITECTURE.



DOCTOR, did I ever tell you what I know about medicine?"

"No," responded the Doctor, dryly, taking a sip of claret, and opening his eyes in my direction as much as to say, 'I wonder what *you* know about medicine.'

You see, the Doctor and I had contracted a sort of acquaintance, not to say friendship, while I was building St. Mary's, and he, next to the Rector, figured as the strongest and most influential member of the Building Committee.

After our morning inspection of the works, he often invited me to his frugal lunch, which included a glass of wine and a cigar.

On these occasions the Doctor gave me his reminiscences of the English cathedrals, nearly all of which he had visited in flighty summer trips to Europe, and quoted Ruskin and Ferguson when our architectural discussions seemed to need reference to authority on his part.

The Doctor enjoyed quite a reputation as a critic of architectural art, also as an expert mechanic, because he spent many of his leisure hours in a workshop attached to his house, where he was known to perfect a machine for stamping pill boxes out of sheet metal on a Japanese principle of two elliptic cups of slight eccentricity fitted over each other. The Doctor often told me when I praised his mechanical ingenuity, that when he was made a phy-

sician he feared a good mechanic was spoiled.

And so I liked the Doctor's claret and cigars, and for that matter also the Doctor himself, for he was a kindly old gentleman who loved St. Mary's, architecture and mechanics, and who never hated anyone or anything.

I give up all claim to popular sympathy, but many of my professional brethren doubtless know what a terrible thorn in the side of the architect is a man of the Doctor's description; and then you see I cannot fight him any more than I could a woman or a child. And if I try it by gentle logic or scientific or artistic reasoning, it is of no earthly use, for the Doctor does not know when he is down in an argument, and no man of courage can kick a fellow when he is down whether he knows it or not.

So I made up my mind I would tell him some day what I knew of medicine, and when I saw him open his eyes wide, I plunged into it at once.

"To begin with, Doctor, I inherit medical knowledge from my grandfather, who was a physician, and so were my uncles for that matter. It's in the blood, you see, on my mother's side. We must grant that there is something in heredity and environment and early training. Darwin does as much——"

"Fiddlesticks," said the Doctor, "you may inherit from your grandfather mental and physical vigor or defects, but not medical knowledge; and let me

tell you that if you did, you would be worse off than if he had been a shoemaker, for you would inherit the medical errors of the times. I venture to say your grandfather bled, cupped and leeched his patients copiously, and suffocated persons suffering from fever in closed rooms. If your mind is in any sense affected by this sort of heredity, it must be disinfected before it can be said to be receptive of true knowledge. It sometimes occurs that the ancestors of eminent men in various walks of life were of the same profession and more or less distinguished; but, as a rule, great men develop spontaneously without a grain of heredity to show for themselves. So, if you want to show me what you know about medicine begin with yourself, and don't talk about your ancestors."

"Well, Doctor, my parents being poor they boarded a number of medical students, and I may say that I was brought up in an atmosphere of anatomy."

"Good," said the Doctor, "you doubtless played with the bones; but will you tell me what you know of the *os tibia*, and what is its condition in a child and in a grown person?"

"Well, Doctor, I must confess that it has slipped from my mind, if I ever knew it; but then think of the practical experience I gathered as one of a large family of children, who all went through the measles, and the whooping cough, broke their arms and ribs walking on picket fences and swinging on gates, and of the large family of children I have brought up myself, to say nothing of my personal sufferings with dyspepsia and rheumatism. Why, I have tried experimentally on my own person most medicines to be found in the '*Materia Medica*.' And then I have read much on the Humors of Hipparchus and the Methodism of Gallen, to say nothing of the practice of Sangrado, of modern Water Cures, of the Faith, and Walking Cures. I have visited many of the celebrated baths, and have swallowed many waters from Saratoga to Carlsbad. I should think you might admit that I know something of medicine without doing violence to your professional pride."

"My dear fellow," said the Doctor, "your conceit is not incompatible with common honesty. It may be explained as the result of profound ignorance. For forty years I have devoted myself to the study and practice of medicine. Forty years ago I graduated with honors, and then I spent five years in Vienna and Berlin at clinical lectures. Since that time I have had a large and lucrative practice, and acquired, as you know, a respectable reputation, not only with laymen, but also among my professional brethren. During these forty years I have devoted much of my time to reading. I will not boast of native genius, but I may say that I conscientiously applied myself to the study of medicine. And what is the result? I am now convinced, and have been so convinced for the last ten years, that to study medicine with success a man should devote himself to some specialty in order to keep abreast with modern progress, and if possible add something to its acquisitions. How can you talk of what you know of medicine, you who have spent your life in studying architecture, and never had the time to acquire even a smattering of anything else. I might as well talk of what I know of architecture."

"That is just what you *do* talk about. That is just the point I desired to bring you to by my impudent assertion of what I know of medicine. Please accept it as a compliment, a profound trust in your sense of justice, a thorough conviction of your love of fair play, and my utter despair to make you understand the case by any other method. I trust you will forgive me when you realize the enormity of the case. You talk to me of Ruskin and Ferguson, why the Humors of Hipparchus are exact science compared with the speculations of Ruskin on construction, and the ravings of Ferguson on the subject of beauty. If you will be good enough to consider that the anatomy of architecture involves the whole range of mathematics in its application to statical mechanics, that its physiology comprehends a philosophic, historical and ideal conception of the functions of monuments, that its technic in structural combinations and decor-

ative expression demands a laborious training, to be acquired only by hard work and self-denial of many years, and that to compose buildings means a mastery of organisms, which have no model in nature, but must be scientifically and artistically developed on natural laws and not collected, as laymen always suppose, from the surface of existing monuments which almost never express an answer to the problem before the architect, you will admit at once that the suggestions of laymen in architecture are not unlike those of the dear old ladies who are found around the sick bed. And yet the doctor may listen to them and ignore them when he writes the prescription, while the architect is asked to submit his design to the judgment of just such a court and jury."

The Doctor was evidently ruffled. He looked straight at his wine glass for a minute or two and puffed great volumes of smoke from his cigar; then he raised his head, and looked at me in a dazed sort of way, and then gradually melted into a smile.

"Why! you applied to me what we doctors call a heroic remedy; but when I come to think of it, I have no right to be offended, because I am cured. But pray tell me how you architects got into this slough of despond?"

"Architectural and lay human weakness," said I. "To begin with, there is the weakness of the young architect. I wish I could describe to you the mental porosity and effervescence of the immature architectural brain, its illogical gyrations around an axis which is purely a mathematical line and has no foundation in fact, its gymnastics and attitudes, its gaseous inflations and its pyrotechnic explosions. But then it would be of no practical use, the whole thing is so visionary you would not believe it. But I can try it from your standpoint. What is the process by which the young physician gets into practice? He works among the poor. A child filled with green apples is a godsend to him. He gets up nights to visit the woman suffering from compound hysterics and strong drink, and he hopes for the hod-carrier who may fall from the third story and break his

head and legs, not from malice to the hod-carrier, nor for the money it will bring him, but purely from a desire to show to the world that he can heal the sick and mend the broken of limb. Now this young doctor has spent years in the study of medicine, he has walked the hospitals, and he knows that he can render services to society as a physician. But to be employed it is necessary that society shall know what he can do; in fact, he must have a reputation.

"It is not so with the young architect. He is not content to hang out his sign and wait for clients—humble clients at first, and others more important afterwards, for very good reasons. In the first place his announcement to the world that he will henceforth do the work of an architect does not imply that he knows how to do it. There is no law which compels him to pass through a prescribed course of studies before he presents himself for professional employment, as is the case with the young physician. In the next place, both he and his clients imagine that his merits may be determined from his designs, his drawings, sketches, etc., which is a radical error."

"You mean to say," the Doctor here interrupted, "that a layman cannot tell the nature and architectural merit of a building from a design of it?"

"No more than they can the merit of a physician from his prescriptions. A physician's prescription is an empirical formula intended to alleviate abnormal physical conditions indicated by a scientific diagnosis. The prescription being written in characters incomprehensible to the layman, he is content, in his avowed ignorance, to abstain from an attempt to inquire into the rationale of the diagnosis. An architectural design is a scientific, logical, deduction from certain fundamental facts unfortunately presented in a more or less artistic form. This form conveys an idea to the uneducated as well as to the intelligent mind of varying artistic merit. The more obtuse the observer the better he will like it. To critically place it at its true value requires analytical acumen of the highest order. Hence it is that men select their

physicians, lawyers, engineers, etc., by consulting the opinion of experts as to their professional merit, or, what is equivalent to this, by their reputation, but they think they can judge of the merits of an architect by their likes and dislikes of his drawings.

"There are architects who have a fair technical training, know something of æsthetics, have passed through an academic course of architecture at some respectable institution, have seen as well as read of the monuments of the world and have in addition to this some practice under the guidance of an architect of reputation. Their number, however, is small; I should say not more than three per cent of the architectural population of the country."

"What of the other ninety-seven per cent?" asks the Doctor.

"To answer this question let me observe briefly that all knowledge begins with a cursory observation of the appearance of things. Take astronomy for instance. Antiquity contemplated the stars as aggregations resembling animate and inanimate forms. The question was not what is the magnitude, distance, motion, constituent matter of these stars; but what is the physiognomy of the starry heavens. Alchemy attempted to produce a metal that should look like gold. From Aristotle to Lavater endless volumes have been written to show how physical and mental conditions of men may be determined by their external appearance.

"Architecture to the ninety-seven per cent is at this day only the more or less critical examination of the appearance and feature of monuments. Mr. Shandy's account of Slawkenbergius, if mythical, is nevertheless allegorically applicable to modern popular notions on architecture; it is very much a study of noses.

"Let me tell you a story of my young friend, John, as an object-lesson of architectural human weakness. John visits me at my office from time to time, to get my advice, as he says, to follow his own, as I know.

"What is it this morning, John, you are radiant?"

"I don't mind telling you. The

National Discount Bank is going to build a seventeen-story fire-proof building."

"Well, John, have you been employed as the architect?"

"Why, no, it is to be a competition?"

"Then I presume you have been invited to compete and are to be paid for your sketches?"

"Nothing of the kind. Really, I cannot make you out."

"Well, John, let me explain. You know that in most competitions members of the committee are bent upon employing architects in whom they have a personal interest. The only possible guarantee I can have on entering the lists in a competition is in the fact that I am invited to compete, which shows that someone on the committee desires that I should ultimately be employed as the architect of the building, and in order to make sure that the invitation is not an empty compliment, I insist upon being paid for my sketches."

"There I differ with you entirely. I prefer that no one should be paid for his sketches; it keeps out the strongest men in the profession and makes my chances of success all the better. What is more," continues John, slyly, "suppose there is a committee of five, there certainly is not more than one in the five who cares for architecture *per se*, the other four are bent upon employing their friends. This one man may be in favor of paying for sketches, but he is overruled by the other four who agree with me that architects of reputation must be kept out at all hazards. Hence it is that you are but rarely invited to compete, and lose your opportunities."

"I presume you have secured an invitation from one of the five?"

"Not as yet, but I expect to do so. I have made a formal application in writing to the committee as a whole, requesting permission to submit plans, specifications and estimates of costs of the proposed building for the consideration of the committee. My letter contains references to respectable parties which will not be disregarded, more especially as such a permission involves no

expense. In addition to this, I have called upon four out of the five to request their personal patronage in the matter. I have told each of them that I rely upon his acknowledged influence with the committee, and his superior judgment in matters of building to bring out the intrinsic merits of my design, which without his help would probably not be properly understood, and I asked each of them for his personal views of what the building ought to be architecturally, constructively and economically. I told them that without being in possession of these personal views I should not attempt to enter the competition at all. One of the four said that the committee would probably issue a programme of requirements to all the architects, and that he did not intend to anticipate this by giving his private views. The other three, however, were greatly pleased with my suggestions, and two of them invited me to dinner to talk the matter over at leisure.'

"'You are in clover, John,' I said; 'you will probably be proposed by three of the committee, and find yourself in a majority at the start.'

"'So I thought at first, but I since found out that one of the gentlemen who invited me to dinner has a nephew just returned from the École des Beaux Arts. He intends him to be employed as the architect of the building. I did not know this when I dined with him. He seemed frank in his conversation; but interspersed it with perplexing questions such as: Which of the five orders will you select for your design? What is the relative cost of granite and terra cotta? How far would you go in the matter of ventilation in an office building? What are the proper proportions of a room? Do you deem it essential that all carving shall be done after the building is up? What is the relative cost per cubic foot of brickwork here and in Paris? How do you like the American factor of safety? I subsequently discovered that these questions tended to elicit proof that I did not know much of architecture in general and of architecture as practiced in Paris in particular. The gentleman who did not

invite me to dinner saw me at his office, where he showered upon me his views without giving me an opportunity to put in a word edgewise. These views related mainly to heating, lighting, ventilation and general economy of construction. He said he did not care much about architecture as long as the building was sufficiently showey to command tenants.'

"'Well, John, it seems to me now that your chances of success are pretty slim. What is the use of going into a competition without pay when you have no friends on the committee?'

"'True, but you make no allowance for the merits of my design. I propose to carry the day on the bottom rock of merit.'

"'But I thought you told me that four of the gentlemen of the committee did not know or care about architecture in the abstract.'

"'Yes, that is so; but I intend to outstrip every other plan proposed, and make my design an education to the committee, an object-lesson in architecture. I have some ideas, and that is just what I intend to talk to you about. What do you think of the Temple of Jupiter Stator?'

"'Shades of Phidias, John, you do not propose, I hope, to build a temple forty feet wide and two hundred and twenty feet high and fill it on the inside with offices.'

"'Not quite so bad as that. I propose a temple at the top, to contain the three uppermost stories, as the crowning glory of the building.'

"'And what will you do with the fourteen stories below the temple?'

"'That is what I called to consult you upon. What do you say?'

"'I can suggest nothing better than a dead wall of cyclopean masonry.'

"'Well, I am so glad, that is just what struck me at once. If I could build such a wall on Broadway, a cyclopean wall forty feet wide and one hundred and seventy feet high my fortune would be made. Just think of the excitement of the press when the wall reaches a hundred feet in height, built of huge stone of from ten to forty feet in length and from two to eight feet in height, say quarry-faced stone-

work twenty feet high and then a polished course of granite, with bas-reliefs of the War of the Rebellion (Sheridan's ride through the Shenandoah Valley), then again a bulk of rough quarry stone of more or less heights, and another band course of polished stone. Think of the trucks with six to twelve horses unloading single stones in front of the building, of the immense cranes, tackle, gear and steam engines raising this gigantic material to its place on the wall; think of the crowds of people watching the progress of the work from the street and opposite windows and roofs; think of the papers that would be read before learned societies on the probable use of such a structure, of the inquiries by foreign associations of architects; think of the orders for new buildings that would flow into my office; and, mind you, it is all so perfectly practicable. I should light the rooms with minute incandescent lamps spread in ornamental groups over the walls and ceilings. I should pump air of any required temperature into the offices, air permeated with the essence of new-mown hay, of the seaweed or the mountain fir. I should supply each tenant with just the season he prefers—spring, summer or autumn; he shall be at the shores of the sea to-day, or at the top of the mountain to-morrow, or, if he likes tropical heat, with the dry atmosphere of Egypt, flavored with just a suggestion of the essential oil of the lotus, all he will have to do is to touch a button and the janitor would change his atmosphere in a few minutes. I ask you would not offices of this description be in demand and bring high rents? Why, the occupants would be overwhelmed with clients just from motives of curiosity to see how the thing works. If I could talk to that committee for an hour or two twice a week during the next month I am sure I could convince them of the brilliancy of my scheme. As it is, they are doubtless prepossessed in favor of windows, a common prejudice which has so far prevented a true revival of antique architecture. Schinkel, the greatest of modern Greeks, had to succumb to the window mania, and so must I no doubt, and the question still remains

unanswered: How am I to treat the fourteen stories below my temple of Jupiter?

"If you set yourself the problem of balancing a full-fledged temple one hundred and seventy feet above the sidewalk of Broadway and cannot use a cyclopean wall, I can suggest nothing that will answer the purpose."

"I have been thinking that a great arch might do it. The arch is expressive of strength. What do you think of an arch with voussoirs ten or twelve feet high?"

"That would do well enough if you had room for abutments to sustain the lateral pressure indicated by such an arch. There is not room enough in forty feet for an arch such as you have in mind, and also for its abutments, considering the height. You would find upon due calculation that your arch will be ridiculously small."

"Of course you know," said John, "that the end piers are tied together at every story with iron beams, and there is practically no lateral pressure; besides, the arch is supported vertically by the piers between windows at short intervals."

"In that case, John, you need no arch at all, but if you present to the public a great arch, as you say, with an expression of great strength, then the public is entitled to proper and sufficient abutments, or else you are not pursuing architecture as a fine art."

"We cannot have everything in this world; I shall have to stick to the arch and abandon the abutments. I thought you might help me out of this dilemma, but now I see that I shall have to shift for myself. Wait till you see my drawings, I think you will admit that I have done my best under the circumstances, and no man can do more."

"And with this John left in a huff, and I saw nothing of him until after the competition had been decided. He came into the office in a great state of excitement, dashed his hat upon the floor, and dropped into a chair. I knew at once that his sanguine expectations regarding the Discount Bank competition had not been realized, a blow which involved disappointment

in various directions, and a pecuniary loss which poor John could not well afford.

"'I would not mind being beaten by a better man, but this is too bad,' he bursted out after a while, with tears in his eyes.

"'Tell me all about it. John,' I suggested, in order to divert his mind.

He straightened up a bit and told me this story:

"'You know when I saw you last I was full of the idea of a cyclopean wall, and, as an alternative, of the great arch. The great arch and the temple I concluded must be the winning card; but the cyclopean wall had such a hold on my mind that I would have been willing to barter a year of my life for its success. So I made up my mind to present a plan for either scheme. Of course, you know what it means to prepare two sets of plans in a quarter inch scale within the prescribed time. Then there was the matter of perspectives of the exterior. The programme was silent on the subject of scale, point of view, picturesque treatment, coloring, etc. It was important that my perspectives should be the largest presented and highly colored. I engaged the services of an eminent colorist to do the coloring at the rate of one hundred and twenty dollars apiece (\$150 is the current price). Then there was the work of preparing specifications and detailed estimates, consultations with contractors and experts in steam-heating, ventilating, plumbing, electric lighting, manufacturers of elevators, etc. It is not necessary to detail to you the immense work involved in preparing completed plans and specifications for a building of the magnitude of the Discount Bank in the short space of six weeks as you are familiar with the subject. I commenced with four draughtsmen; at the end of a fortnight I had six, and we talked seriously of working overtime in order to get through with the perspectives to give the colorist an opportunity to do his work with leisure sufficient to do it well. While buoyed up with hope of success a man can do much work in a short space of time, and so I did in the hours between eight A. M. and six P. M.,

spending the rest of my waking hours in thinking how the effect of the drawings may be enhanced here and there and the cost of construction decreased everywhere, for this was not merely a question of who could produce the best design to answer a given purpose; but also, who could execute it cheaper than anyone else. The matter of ventilation being seemingly uppermost in the minds of the committee, for they talked about it constantly, I made this my special study and worked upon it nights after all others had retired; and I do think I developed it to a degree heretofore unparalleled in business buildings. I devised two great fans, sixteen feet in diameter, to be placed one in front and the other near the rear of the building to supply fresh air to each of the separate offices; air heated in winter and cooled in summer so that the inmates could regulate its temperature by simply touching a button which, by an electric contrivance governed the ingress of air by means of ingeniously-constructed valves. A system of this magnitude is necessarily costly; and I spent many nights in simplifying the apparatus and reducing the cost to twenty-five thousand dollars, a sum so small when you consider the work accomplished and its great importance in the minds of the committee that I felt sure of success on this ground alone. At times, however, I got very blue, thinking of the many possibilities outside of the merit of my design which might operate against me, and one morning after I had been working on my plans for nearly a month I awoke in a cold perspiration from a horrible dream. You see I intended to ask permission to explain my plans personally before a final decision; and at stray moments I rehearsed in my mind what I would say on that occasion. I was so full of the subject I expected to command the attention and interest of the committee for hours and finally elicit unanimous applause. So I dreamt that I was standing before a green baize-covered table in the directors' room of the Discount Bank, the members of the committee on either side and the chairman at the head, and I, of course, at the foot of the table; my drawings

pinned up on the wall behind me. Now, the directors' table, which I had seen many times, was large enough to accommodate twenty-three directors comfortably, besides the president and cashier who acts as secretary. It is about twenty-four feet long. In my dream, however, the table seemed one hundred feet long with the committee sitting away off at the other end of it; the nearest member being no less than ninety-six feet away from me. This discouraged me ever so much; but while they were consulting at the other end in low tones I endeavored to collect my thoughts, and when the chairman said that the committee was ready to hear my explanations, and have me answer some questions, I proceeded at once with a well-studied description of the Erechtheum, touched lightly upon the invasion by Xerxes, the defense at Thermopylæ, the subsequent federation of the Greek states, the vast contributions accumulated under Pericles, the building of the outer harbor, the artistic triumphs of Phidias, etc., when I was interrupted by one of the members of the committee by the statement that a directors' meeting within half an hour necessitated that I should confine myself to the subject of my plans, and that I should be as brief as possible as the committee would probably want to ask me a few questions. Upon this I plunged into a description of my plans, and dwelled at some length upon my system of ventilation, which seemed to interest the committee somewhat, until interrupted by the question "what this matter of ventilation would cost." I answered, "not more than \$25,000." This seemed satisfactory; but one question being asked it opened a flood-gate of them, and I was not permitted to say another word regarding my plans, and the interview rapidly tended to a conversation between the members of the committee, of which I now and then heard a word, or a sentence such as "Ridiculous." "Phidias is not one of the competitors, is he?" "There seems very little business about him." "Humbug, etc.," and then I was gently pushed aside by the cashier of

the bank who said the directors' meeting was opened, and I occupied his place. The janitor rushed in with a couple of chairs upon his shoulders, and tore a great hole in one of my perspectives, and the president of the bank jumped upon the table, stamped his foot three times, and called out in a loud voice "the board is in session; clear out, all architects;" and I awoke with a shiver.

Whether this horrible dream was owing to overwork, want of sleep, or a late supper, I cannot say, but I do know that it left me in a dreadful nervous condition. Arrived at the office, I found everything dragging; nothing finished, and the men tired and discouraged. Instead of trying to get matters into shape in the office I felt that I could do nothing definite until I had made the rounds of the committee, to learn something of the prevailing state of mind. When I now look back upon this visit it seems to me that they questioned me extensively as to what I was doing, and told me little of what they were thinking about; but a clerk of the chairman, a schoolmate of mine, who noticed my nervous state, told me that nothing would succeed in the competition but the plainest sort of a building, a plain wall with as many and as large windows as are needed to light up the offices. This information upset all my plans and I reluctantly came to the conclusion to prepare a third design, retaining the idea of the temple for the upper stories, but supporting the temple with a plain wall pierced with the necessary openings. If the openings were not made too large, I felt that the æsthetic result must be reasonably fair and pleasing to the committee, probably inferior only to the cyclopean wall. I engaged three more draughtsmen, you were good enough to lend me one of yours (many thanks); he was a high-priced man and worked very leisurely, certainly with much repose (no snap), but in the end his work was perfect, and also abundant as he never had to do any of it over again. A new set of estimates had to be prepared for the third design. This was essentially my work, and I

can assure you I worked hard. I should not like to live over again those last two weeks prior to handing in the plans, which I did punctually at the time appointed; but I can only say that the moment the drawings were out of the office I fell into a heap in my office chair and finally rushed home and went to bed.

I heard nothing from the committee for a week, when I received a short note from the secretary stating that no meeting would be had in less than a month from date, and that I might expect further notice of a hearing to be granted to architects prior to a decision. At the end of a month I was notified to appear for a hearing at three P. M. of a certain day, and when I arrived at the office of the chairman, I met one of the competitors coming out of his private room, and three others waiting outside. Evidently the process of giving a hearing to the competing architects was to be dispatched at one session of the committee. Called in by the secretary of the committee I found the members in close conversation, evidently interesting to themselves, as they did not notice my advent. I looked around the room where I saw the various perspectives pinned up against the walls (no ground plans or other geometrical drawing). One of the perspectives struck me as hideously bad. It represented a Corinthian temple two stories high and on the top of this fifteen stories of plain box with windows distributed indiscriminately over the surface without regard to construction. In the corner of the room next to me stood a megaethroscope on a tressel. I had just time to peep into it when I saw a representation of that same ugly perspective on the wall, a temple with the great ugly box on top of it. The temple was evidently meant to represent the banking rooms, for in front of it, on the sidewalk, there was painted a crowd of gentlemen, clerks and bank messengers in the act of rushing in and out of the building. The bank messengers carried heavy satchels; the bank clerks' portfolios and large pocket-books, and the gentlemen jostled everyone in their

hurry. At the curbstone a number of drays were backed up, from which specie and ingots of silver were in the process of being discharged. The ingots were loaded upon an elevator intended to run down to the basement. An apple-stand and a few policemen completed the picture. I saw all this in a very few moments, and when I looked towards the committee they were still engaged at the other end of the room in examining something which stood on the floor. This gave me plenty of time to rehearse a resolution not to say one word upon architecture or art in general, but to confine myself to matters practical, such as the arrangement of the offices, of the access to them, of light and ventilation, heating, etc. I repeated once more my speech, which commenced somewhat in this way:

"As men of business, eminently practical, gentlemen of the committee, I will not detain you by a dissertation on the æsthetic motives which generated my designs, but will at once proceed to practical results attained, which you will permit me to speak of as matters of interest to you, rather than as achievements of mine."

"I was saved all trouble of saying a single word of all this, for suddenly the chairman turned round and members took their seats at the table which disclosed to my view a plaster model of precisely the same thing I saw in the megaethroscope.

"The chairman at once addressed me as follows: 'Ah! Mr. X, we are very glad to see you here; we have looked with interest at your drawings. Admirable! We all like them! Great industry and enterprise. You need not say one word on the subject; we know it all; and I express the conviction of the members of the committee when I say we appreciate your efforts. Our secretary had prepared a synopsis of your specifications, description and estimates, and I may say without conceit we are perfectly familiar with them. We especially value your remarks upon ventilation. So pertinent, "without oxygen, you say, we cannot exist." But let me ask you. Are you aware that a system of ventilation has been invented,

inexpensive, simple, a series of flues with a gas-burner or two at the bottom of each which produce a draught of fresh air into the respective rooms?

"No," I said, "I am not."

"I presume," proceeded the chairman, "you do not read the papers, and are not familiar with the latest progress of science?"

"Pardon, I am aware that such a notion exists; but I am not aware that it answers the purpose."

"And why not, pray?"

"Because the number of cubic feet of air to be moved through a given space represents a mechanical force, the equivalent of which in units of heat cannot be produced by less than twelve hundred times the number of burners contemplated by the invention you speak of."

"Who says so?"

"I have gone through the computation on the theoretical principle of the correlation of forces and this is my result. Practically, the number of burners required are greater by reason of inevitable losses by friction, radiation, etc.; but if these losses by the ingenuity of man were reduced to nil then my calculation would be correct."

"And pray who guarantees the principle of the correlation of forces?"

"Such men as Joule and Meyer."

"Are they in the ventilating business? I never heard of the firm."

"They are in no business whatever. Mr. Meyer, a German scientist in the fore part of this century, deduced the value of the unit of heat in terms of mechanical work mathematically; and Mr. Joule, an English scientist, demonstrated it by a well-known experiment soon afterwards."

"You say, Mr. X, that Mr. Joule lived in England and Mr. Meyer in Germany in the fore part of this century?"

"Yes."

"We now count the year of our Lord 1894. What did those gentlemen know of the requirements and construction of business buildings in this country and at the present day?" He expected no answer, but continued: "I am glad

to have seen you again. I can only say your drawings are most beautiful. (To the Secretary.) Call in Mr. Y."

"I have since learned from my friend, the clerk, that Z, the author of the design of the plaster model, has been employed as the architect of the new bank. His paper on ventilation contained the statement that the use of steam engines and fans is obsolete, and their work is now done by a few gas jets. This statement he supported with a guarantee of the inventor, who therein agrees to return half the cost of the apparatus if within six months from the time it is put in the building it fails to answer the purpose. The total cost not to exceed fifteen hundred dollars."

"Now, Doctor, I am done. I am heartily sorry for John. He is a poor man of business, illogical, visionary, sanguine and idiotic at times, not thorough in construction and æsthetics, but as architects go far superior morally and intellectually to men like Z, for instance. This unfortunate competition has cost him all his little savings, and has materially impaired his health and spirits."

The committee was doubtless pleased with the pictorial illustration of the business rush in front of their future bank, impressed upon their minds repeatedly by the plaster model and the wonders of the megalithoscope.

This pleasure led them to like the perspective, hence the architectural design it represented; they admired the businesslike facility with which Z condemned an obsolete method of ventilation. They took it for granted that it was obsolete because he said so, and because he promptly supported his assertion with a guarantee from a known business house. They liked Z as an artist, and as a business man, and it is not surprising that they intrusted him with the charge of their new building, and men like John had to go to the wall. The next time we meet, Doctor, I should like to have a talk with you on the human weakness of building committees and the vicissitudes of architecture arising from the same.

Leopold Eidlitz.



INDUSTRIAL ARTS IN TIME OF PEACE.
(No. 33.)

(A fresco by Sir F. Leighton.)

THE INFLUENCE OF THE EARLY RENAISSANCE ON PAINTING.



THE attitude of painting, as an art allied to architecture, towards the development of the early Renaissance movement in English art of the present day is fully as worthy of our attention as that of sculpture, which in these pages we have already considered. Moreover, the subject requires to be treated on somewhat similar lines, for as we said that pedestal sculpture is a branch of the art usurping to-day too prominent a position, as compared with sculpture applied to architecture, so to a still greater degree we shall find that easel pictures have all but destroyed decorative painting.

As an architect writing in an architectural magazine we must consider the subject from our point of view, which is a decorative one, and entreat our painting friends to lend us their ears in all tolerance and good-fellowship, while we tell them what we think and want.

Regarding our subject, then, however briefly from the historical side, let us first consider what has been the line of development of the art in the past, so as to be able to judge what we may expect in the future, for it appears to be true that no art attains to a high

standard of development in any country without some roots in the past.

It appears, then, that as far as churches are concerned, fresco painting was early employed in England on Byzantine lines, and some such early and rude work in our churches has been deciphered by the aid of the instructions issued by the Councils of the Eastern Church for the guidance of sacred painters. These instructions, resulting from the Iconoclastic movement, were so thorough in prescribing the treatment of saints, their relative rank, colors, etc., that one of the Fathers urges that painters could not be fairly accused of heresy, seeing that they painted according to the principles and instructions of the Church.

Modern artists would have a good deal to say as to such restrictions, but, as a fact, such a priest-regulated art is not unfavorable to decorative effect in architecture, as may be seen not only in Egyptian work, but also in modern Greek churches, which often have a solemn and dignified aspect as compared with many modern Roman Catholic interiors. This is due to the traditional lines having been observed; for the severe lines and straight attitudes, the simple coloring and conventional backgrounds and also the absence of all perspective are all character-



SOUTH LEIGH, OXFORD (OLD).

(No. 1.)

istics of this early style. Though often unappreciated by the modern painter, they are elements that harmonize with the inevitable severity of the architecture. For architecture is the most restrained of the arts; and atmosphere, foreshortening, perspective, etc., the triumphs of modern art, are, when in excess, elements destructive of architectural grandeur. Our friends, however, need not be alarmed, they may continue to talk of dead Byzantine art, and we will content ourselves with a wish that they may learn to combine a decorative element with their modern improvements.

In England, however, at no period were the fresco decorations of importance compared, for example, with those of Italy. There are churches, in Norfolk and Suffolk especially, where color is admirably applied to screens and roofs, and saints are painted on the panels, but even allowing for all possible Puritan destruction, it is difficult to imagine that the art had a great development. The most important work seems to have been in the palace at Westminster, where a room, called from its decorations, the "painted chamber," had tiers of subjects of a highly decorative character, the gold employed having a roughened ground, a detail of much importance too often neglected in modern work. The use of stamps to form patterns on which this gold was to be applied was common in Italy, as in Cimabue's work at Assisi, and very likely a somewhat similar method was employed in the chamber mentioned. Some churches in England are distempered in color all over, and have diaper patterns painted upon the surface, producing a somewhat gloomy effect, unless we suppose that the original colors were glazed over and that this glaze has subsequently been destroyed by damp and white-wash. The supposition of glazing is advanced to explain the crudeness of much mediæval coloring, too often copied in restoration of modern Gothic interiors, producing a rawness of color that one cannot imagine to have been the product of an artistic taste.

These restored interiors, fortunately more common in France than in Eng-

land, raise the question of the limit of color in the Gothic style, for if a church is to be painted to the extent practiced in these restorations it might as well be built in plaster as in stone, seeing that the surface is entirely covered, and the colors themselves, crude reds, blues and greens used on the shafts and in the imitated wall hangings, destroy the plain architectural effect of the natural stone. Moreover, the attempt thus made to rival the glass in strength of color is one which the nature of the materials renders a certain failure. A somewhat similar question is a difficulty in St. Paul's, London, and indeed in any stone-built interior, namely, what material is most likely to harmonize with the stone which will darken and perhaps look dirty compared with the painted surface, when if all the stone work be painted there is a loss of dignity, the effect being that of a plaster instead of a stone interior. In St. Paul's Cathedral, an opaque glass (a sectile mosaic), is being used which it is expected will harmonize with the stone surface, and a trial attempt at painting the same in cream color with gilding in parts, has fortunately been abandoned. Some people are bold enough to declare that painted architecture is a relic of barbarism and that it has decreased with the increase of art perception, that as in Greek temples, the latest had the least color.

But, to return, at Westminster the employment of French or even Italian artists explains the superior character of what was done, and we doubt if the state of the country was such as to allow of a grand art at that stage of its development. Consequently, Charles I. must be considered as the introducer of decorative painting on a grand modern scale by his employment of Rubens, then on an embassy to his court, to paint the ceiling of his new Banqueting Hall. Thus, this building was not only, as we saw in our first article, the beginning of the Anglo-Italian classic school but was also probably the first example of decorative painting of the epoch in England. If, however, the Whitehall palace remains a grand dream, not less so was this branch of the sister art checked at its commencement.



GRAND STAIRCASE, EATON HALL.

(No 4)

Nicholas Hawksmoor, Architect.

Our next example is the ceiling at Greenwich, 1708-1727, the work of Sir James Thornhill, the father-in-law of Sir Christopher Wren. In consequence of this connection we find him decorating the buildings of his son-in-law and his pupils, the chief works of the age, such as the great hall at Blenheim, the staircase at Eaton and the dome at St. Paul's.

The well-known staircase and saloon at Hampton Court Palace, painted by Verrio for William III., also display the characteristics of the style especially in the treatment of the cove, supporting the central circular painting. It is true, this type of work is in no favor in the present day and was denounced some years ago as sham. It is, all the same, extremely characteristic of its age and is in close union with its architecture.

We find this Chiaroscuro work in the Vatican forming the base of the fresco work of Raphael, and from being merely the imitation of a sculpture panel occupying a vacant space, it advanced to be the sole occupant of the walls, and adding imitations of architectural forms, transformed walls and ceilings into columned perspectives crowned by receding domes. It has been well said that Paolo Veronese painted the surfaces of Palladio's saloons, and in return borrowed his architecture for the background of his pictures.

So close a union of painter and architect must be good, although the result is vitiated to our eyes by faults of style. This scheme of decoration is praised as extending the apparent capacity of the apartments and transforming the enclosing walls into agreeable distant views, a result to be obtained in the succeeding age by the employment of gigantic mirrors which, perhaps, illustrates as well as anything the futility of the end proposed. As far as the ceilings are concerned, we are invited to admire the art whereby a flat ceiling becomes a lofty cupola and not to forget to notice the people looking at us from a balcony, with a background of blue sky. Decoratively we have shades of brown, which age has often rendered of cool and hand-

some hue, and which deserves to be admired by the school which affects a sombre if somewhat muddy style of decoration. The staircase of Eaton Hall, built by Nicholas Hawksmoor, Wren's best known pupil (illustration No. 4), is a restrained example, the frescoes being confined to the panels formed by the strongly marked architectural features.

Sir John Vanbrugh, also a pupil of Wren, and one of the most original of classic architects, was unable, through his quarrels with his lady-client, the Duchess of Marlborough, to complete the interior of his masterpiece, Blenheim Palace, according to his own wishes, but probably the result (see illustration No. 5) does not greatly differ from his ideas, being decorated in the style of the day, as may be seen by the illustration of the characteristic saloon of the palace.

This effort at the grand art was, however, short lived in England. Apartments became French gold-and-white rococo, with Watteau panels in color at the most, and at a later period were hung with silk, on which easel pictures were displayed in heavily gilt frames, the ceilings being treated in a corresponding style (see illustration of Grosvenor House No. 7). The churches of the epoch remained clad in puritan whitewash. St. Paul's, alone, remained the crux of would-be decorators, ambitious to complete the work of Wren.

The most hopeful of these attempts, due to Sir Joshua Reynolds, was crushed by a bishop as a Roman innovation, and nothing came of it but the acquisition of an easel picture or two, regarded then as the only safe scheme of decoration for a church. The great artist was to have been assisted by several others, including Angelica Kauffmann, the Swiss-born lady artist, who was one of the original forty members of the Royal Academy. In decorative work she executed panels in the gold-and-white saloons of the day, the subjects being of the sham pastoral or sentimental type.

What her contributions to St. Paul's would have been we are left to imagine. As a strong admirer of the Italian school, and of Michael Angelo



BLenheim SALON,
(No. 5.)



GROSVENOR HOUSE.

(No. 7.)



DELINEATIO PICTURÆ IN FORNICE TEMPLI
S. IGNATII

(h) : α term must have h plus in it
 Also α must be present in α term

CEILING PAINTING.

(Name)

in particular, Reynold's scheme would doubtless have been one of a full and complete use of color, though we may expect that he would not have been uninfluenced by the evil features of his own age. We fear that the style would have had more of the characteristics of the Carracci school of Bologna than of the Sistine Chapel. Angels on clouds, after Correggio, correctly foreshortened, visions of the upper heavens in yellow, with ascending and descending nymphs in blue and white would, we fear, have detracted from the grandeur of the church, unless we suppose a genius, rising above the level of his age, and impressing on his work the character of religion and the grandeur desired by the architect. As we have practically no examples of this style in England, it is not worth while to dwell on the extraordinary errors of the mannerists of Michael Angelo, by whom architecture was subordinated to be the provider of surfaces large enough for their drop scenes (see illustration of Italian ceiling No. 8). An instance of decoration due to a single artist, James Barry (born in Cork in 1741 and a student in Rome for five years) is the large Hall of the Society of Arts in the Adelphi, where six large panels as much as 42 feet long and 11 feet high were executed by him at the price of the materials.

The impetus towards a new departure was due to the Prince Consort who suggested that the Houses of Parliament should be suitably decorated, and a commission was appointed to study the subject of fresco painting, and a grand competition was held in Westminster Hall in which Sir John Tenniel, hereafter to be—the great *Punch* artist—and Maclise, Cope, Dyce, Herbert and others were prize winners, and Haydon, the man who had preached the necessity of a grand style of historical painting was beaten by his own pupils. Mr. Frith, R. A., records, in his reminiscences, that he saw the unhappy artist on the award day in a restaurant at Westminster, and he was shedding tears in the bitterness of defeat. The suicide of the ill-starred apostle is a blot in English art history. Strange though

it may appear, it is true that Sir Chas. Barry was excluded from the commission, and the resulting work hence lacks that unity which it would have had if there had been a leader to control the various works undertaken. As it was, a number of more or less isolated pictures were executed by Watts, Tenniel, Cope and others in the various halls and corridors of the palace, the greatest unity being obtained in the House of Lords, where the architect employing gilding in harmony with the six frescoes by three R.A.'s, Horsley, Dyce and Maclise, placed, three at each end of the oblong chamber in arcaded recesses, ranging with the side windows filled with stained glass and constituting the sole pictorial decoration of the interior. To-day it is known as the *gilded chamber*, a title suggesting the aim of the architect, who, it is recorded, desired to treat the roof with solid gilding as in the Basilicas at Rome. This leads us to the question of stained glass and mosaic, which, with gilding, form a strictly architectonic style of treatment.

Stained glass has exercised a potent influence on the development of painting, which it has undoubtedly checked, if not destroyed, in northern countries. Fergusson makes a striking and just comparison between King's College Chapel, Cambridge, and the Sistine Chapel at Rome, hesitating to decide between the architecture and painting predominant in the one and the other respectively. We doubt if there is an example of a satisfactory interior in which painted glass and paintings are used together. St. Peter's, at Rome, owes much to its clear glass. And, if this is so, naturally we must choose between the two, and our painter friends must, in an interior predominantly architectural, be content to paint glass and to adopt some style of decoration of a rough and architectural character for the adjacent wall surfaces. For instance at Albi are some notable mediæval frescoes painted on the rough brick-work of the interior, producing, at a distance, something of the low-toned decorative effect of a mosaic. Mr. Pearson, R. A., has been trying the same method in the chapel of St.

John's, Red Lion Square, London, the key note being to preserve the continuity of the wall effect both in the wall paintings and the stained glass, and in the grand early mosaic interiors the idea is the same.

Attempts have been made to place the fresco over the chancel arch painted on the rough brick-work. It is idle to deny that this is a sacrifice for the painter, but it is in harmony with the Gothic style.

Probably Sir Charles Barry's ideas were in the same direction, and unity would have been obtained as thoroughly as in an Egyptian temple or a Sicilian Basilica. However, it was not to be at Westminster, and the method of the fresco painters proving little durable, the attempt was left unfinished and a few faded wall paintings remain as the result of a grand idea.

As an influence, however, in English art the competition referred to, proved most salutary. It was the break-up of the old school and the pre-Raphaelite movement was a step in advance.

The decorative side of this romantic effort of Holman Hunt, Rosetti, and Millais has been much overlooked. Holman Hunt records as the starting of the movement, a study by them of the Pisan frescoes, then newly published. Surely nothing could be more significant, for this early Italian school is nothing if not decorative and in close alliance with the architecture of the age right up to the time of Raphael. The misfortune was that for reasons we shall discuss later, there is no scope in England for decorative work on a large scale and the style of the Pisan frescoes is another thing when applied to easel pictures. Hence the efforts of the "brethren" struck the English public with amazement. Nothing of the kind pre-existed in our midst, and architects lent no aid. In spite of the desire of the late Mr. Street and a few others to do so, the movement, decoratively considered, fell short of its promise and the best known of the three developed only into an easel painter necessarily reverting to the traditional modern style for the purpose. Illustration No. 12, one of a series of decorative panels in Marlbor-

ough College chapel shows the influence of Rosetti. The Prince Consort's efforts were not only exerted on this occasion, but also on several others, with more or less success, and by him some German artists were encouraged in this country, Grüner, the author of some works on Italian decorative work being employed at the Mausoleum at Frogmore. A glance at Grüner's representations of Italian work in his books will give a good idea of the dry formal character of his work. It had little of the Italian grace and beauty. One of this group of painters was employed at Bridgewater House, one of Sir Chas. Barry's most important works in the Italian style, without his concurrence, and on the termination of the work the architect being asked to advise upon it, found himself unable to accept the responsibility of suggesting any alteration, the second case in which he had no opportunity allowed him to give effect to his own ideas.

Meantime, however, another force was springing up and Thackeray's saying to Sir John Millais was a true prophesy. "I have met," he said, "in Rome a versatile young dog, named Leighton, who will run you hard some day for the Presidency of the Royal Academy." In fact, starting a few years later in style than the brethren, the "young dog" came to the front in England, with a picture, significantly chosen, of Cimabue's triumph in Florence. Here, in fact, was decorative painting of early-Raphael rather than pre-Raphael style and the effect was gained without what could be called archaic drawing. If then, we had the history and tendency of a national historical school, the artist would have painted in the important churches, mansions and public buildings of this country, employing a style of perfect drawing with gorgeous color, harmonizing in effect with the best architecture of the epoch, but in place of which we have nothing else to show you, but the two frescoes at South Kensington Museum, besides which there are only the unexecuted scheme for St. Paul's Cathedral and some minor work.

It is to be feared that in this country the easel picture reigns supreme. True,



MARLBOROUGH COLLEGE CHAPEL,
(No. 12.)

One of a series of panels by E. Spencer Stanhope.



MEDALLION FOR ST. PAUL'S CATHEDRAL.
(No. 13.)

By Sir F. Leighton.



SCHEME OF DECORATION FOR THE DOME OF ST. PAUL'S.

(No. 16.)

Detail by E. J. Poynter.



SCHEME FOR DECORATION OF THE DOME OF ST. PAUL'S CATHEDRAL.

(No. 17)

Details by E. J. Poynter.

it is often decoratively treated and is so far, pleasing in the decoration of an interior, while satisfying our idea of portable property, still it can never be the same thing as fresco work proper, both as to decoration and in forming a school of artists able to work on a large scale.

Alfred Stevens came later with the ideas of Michael Angelo rather than of Raphael, his scheme for the dome of St. Paul's remains in a model impressed with the unmistakable stamp of genius and far above any scheme yet proposed for that subject.

Inspired by the Sistine Chapel roof, it consists of a series of ribs and grand circles containing subjects between. The ribs are formed by tiers of men in couples, supporting entablatures piled above each other, and these bold figures, nude or semi-nude, were not calculated to please the clergy, and would certainly have to be the work of a great artist, if the necessary sublime character of the religious edifice were to be maintained.

Our illustrations of four trial cartoons (No. 14) hung in the dome itself, form a modification of this scheme by Sir F. Leighton and Mr. E. J. Poynter R. A., the former contributing the lower medallion of the rising of the dead from the sea (No. 15), the decorative framework being by the latter. The details given Nos. 16 and 17 will enable our readers to form a good idea of the whole, which was found to be somewhat less effective in position than had been expected.

Apart from this scheme, the question of the treatment of the dome with ribs is one for very serious consideration. St. Peter's at Rome and many Italian churches of the age are so treated, most of them having constructed ribs to start from which, however, do not exist at St. Paul's, and are not the natural method of constructing the dome. Moreover, however large the ribs are at the base they taper to a most unpleasant extent towards the top, and the usual intervening circles are not suggestive of stability. A plausible concentric scheme was proposed for St. Paul's by Mr. T. P. Teddon, F. R. I. B. A., consisting of rings

of figures round the base without any ribs at all. That is certainly in accord with the constructional idea of a dome.

The dome of St. Paul's, at present, is the most majestic in internal effect of any in the style, having a spacious and crowning character, seeming to cover in the great octagon without effort and without the excessive and detrimental height of its rivals. Of Stevens' work one pendentive exists, executed in mosaic—a grand figure of Isaiah—being the best of the eight that have been finished, in the execution of which various artists have been employed. No doubt from the strictly architectural point of view, these pendentives are open to the same criticism as the late Italian school in general, and cannot pretend to have the same harmony as the Sistine ceiling which we should like to regard as the limit of freedom allowable for work in conjunction with architecture. It is a fact that the Byzantine style of which parts remain in St. Mark's, Venice, at Ravenna, and in Sicily, possesses a dignity that is most in accord with the strong lines of architecture. This dignity is, perhaps, among living artists in England most closely attained by Burne-Jones. His mosaics, glass and tapestry are full of that harmony of line and severity of treatment that the decoration of an interior demands. Their style is one allied to early Italian Renaissance, though there is much of Byzantine and Gothic character in it. For its due appreciation it requires something more than a knowledge of the modern schools of painting. Hence the alleged incomprehensibility of his work, which is quite natural to those unacquainted with its basis (No. 18). William Morris, a pupil of the late G. E. Street, and thus learned in Gothic art, has powerfully helped decorative art in England, executing the designs of Mr. Burne-Jones and carrying out work in which a similar feeling prevails. Our illustration (No. 19) of a room in Eaton Hall, of not much architectural merit, owes its charm entirely to the decorations executed by him, which are of a strongly conventional character, as will be seen.

Somewhat similar in style is the inte-



THE ANNUNCIATION.
(No. 18)

By E. Burne-Jones.



Cheshire England.

DRAWING ROOM IN EATON HALL, MR. MORRIS' DECORATIONS.

(No. 19.)

A. Waterhouse, Architect.



S. F. BODLEY'S DECORATION.

(No 20.)

rior (illustration No. 20) by Mr. Bodley A. R. A., whose churches and houses present numberless examples of interesting decoration of this character. Mr. G. F. Watts, R. A. represents another type of Renaissance, reminding us often of Titian in the large style of the decorative work which he affects. His pendentine in St. Paul's represents a flying angel holding a scroll and has a movement that recalls the rape of Ganymede in the ceiling at Venice by Titian. He was one of those employed at the Houses of Parliament, where there is a fresco of St. George and the Dragon by him, and one can only regret that several of his well known canvasses so strongly decorative in character were not executed in some such public building. There is a story, that on the completion, many years ago, of the grand hall of Euston Station, he volunteered to decorate its walls at the price of the materials, an offer which, incredible as it will sound, was actually refused. Mr. T. D. Crace was an energetic exponent of color decoration, and his son continues his work having been employed in recent additions to the National Gallery, which however is no instance of decorative art on a grand scale.

Mr. Stacey Marks, R. A., should have been mentioned before. The fine frieze of Chaucer's Canterbury Pilgrims, shown in our illustration (No. 21), is a good example of his work, though perhaps to-day such a subject would be considered too literary for decorative painting. The interior is by Mr. Waterhouse, R. A., and illustrates a domestic interior of the Gothic revival. In the Gothic revival the ideas of color decoration were influenced unduly by stained glass and much of the work executed reminds us of non-transparent glass by its strong outline and flat treatment and general conventional character. One class of this work was executed in brown on the plaster surface without any color at all, or only perhaps gilding in parts, being considered a cheap and effective form of decoration for a church. Somewhat similar in style was the painting on tiles, the subject extending over numerous squares without regard to the joints. The best examples of this lat-

ter may be seen in All Saints, Margaret street, by Mr. William Butterfield, whose interior is one of the most highly-decorated examples of the epoch.* The grand chapel of Keble College, Oxford, by the same architect, has a similar style of decoration only that the subjects are in ceramic mosaic, the material not being favorable to their effect. The new mosaic decorations of the choir of St. Paul's Cathedral by Mr. W. B. Richmond, A. R. A., promise to be one of the most important schemes of modern times. I have had the pleasure of visiting these, the scaffolding being still up, and perhaps on some future occasion the subject may be taken up with proper illustrations. Mr. Butterfield has been one of the most consistent advocates of the use of color, his work taking generally the strongly architectural form.

A recent article in this journal has given an account of the use of mosaic in England, so that it is unnecessary to say more on this head, which could not, however, be entirely passed by without notice.

In that article reference was made to Mr. Walter Crane and a frieze by him was illustrated and the general character of his work is so well known that it is needless to speak of it. We give, however, an illustration (No. 24) of a fine interior by Mr. Norman Shaw, having a painted frieze by him. Mr. Crane's name suggests, moreover, the important element of wall paper, as affecting the subject of color in houses and which in England has taken such a great and almost exclusive share in the decoration of our houses. The use of paper in France and Italy is not nearly so important and the character of the work not nearly so good.

To-day, wall-papering occupies the place of the tapestry of the mediæval and early Renaissance ages and in so much is detrimental to the extension of painting.

One may see in Italy a common village inn with an elaborate attempt at a fresco ceiling, in which figures are in-

* (Illustration No. 23.) The effect here is obtained by the use of natural-colored materials and is, as will be seen, very architectonic in character. The painting of the reredos panels is by the late Mr. Dyce, R. A. (the same who was employed in the House of Lords.)



EATON HALL

A. Waterhouse, R. A., Architect.



DECORATION IN ALL SAINTS' CHURCH, MARGARET STREET (GOTHIC REVIVAL.)

(No. 23.)



FROGNAL PRIORY.

Painting by Walter Crane.

roduced freely, and though it is undoubtedly bad, still the fact of its existence is significant. From such rude beginnings the works of the great artists have their origin, and the latter are but the final perfection of a long series of previous efforts. If then in England it has not been and is not common to have decorative painting on any large scale in either houses or the smaller public buildings, how is it possible all of a sudden to be able to successfully decorate a great building. Obviously both the experience and the men will be lacking. Tapestry, in the past, with its cool, pleasant, decorative tones, formed a surface satisfying the eye while it protected the inhabitants of the apartment from cold and damp, both inherent in this country and both fatal to fresco work. Tapestry, again, combined admirably with the ordinary woodwork used in paneling and doors and while enhancing the furniture, it left its rivals far behind in comfort and effect. Illustration No. 25 shows the mediæval hall of Hampton Court Palace with tapestry dado, and No. 26, the council chamber of Hardwick Hall, and No. 27, the state bedroom, showing how exclusively the tapestry covers the surface. The interior (No. 28) from Holland House has tapestry panels with a fine plaster ceiling of Jacobean date, while the example (No. 29) from Blenheim Palace show tapestry combined with the coves and wood dados of the later epoch. Herein, too, to-day should be a field for artists able in decorative design, for tapestry well treated in accordance with the good periods and not in foolish imitations of paintings, is a material worthy of the best efforts of any artist.

The fault of the exclusive easel form of painting is that so many artists seem unable to work in any other medium, and though all forms of art have their restrictions, they cry out against the limits of mosaic, glass, or tapestry, in all of which their predecessors did notable work.

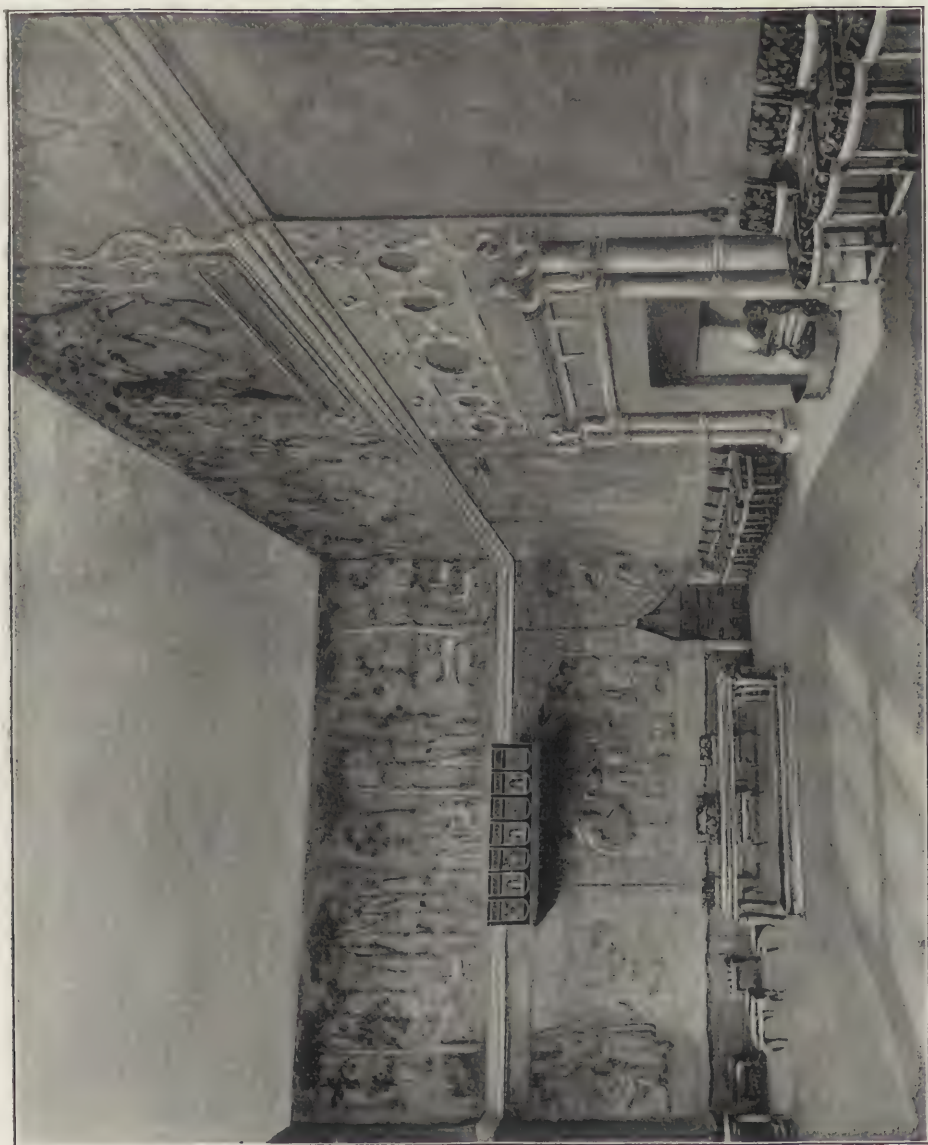
With regard to the position of decorative painting in domestic interiors, seeing that there is a rooted objection to paintings on the ceiling, forming with the obtrusive character of modern

furniture an element hostile to painting, other than in easel form, the best solution may be found in the treatment to be seen in early Renaissance interiors in Venice, where a deep frieze is formed by well-detailed pilasters and cornices framing the canvases. The ceilings are paneled and have suitable paintings. The whole upper portion of the room forms a rich and suitable covering to domestic interiors. In Venetian interiors of the Renaissance, the canvas surface, from the point of view of the grand style of Florence and Rome, whose frescos are on the wall itself, is, no doubt a defect; but it is equally certain that it is more in accord with modern feeling, which prefers interiors relatively small but rich and whose luxury takes the form of high finish in surfaces and ornament. The interior illustrated (No. 30) at Hewell Grange, by Bodley & Garner, is an effective instance, only that here the canvases are exceptionally long and not sub-divided by pilasters, nor are the panels of the ceiling decorated.

There is a feature in French life which does not exist with us, namely, the "Mairie" or small town hall, where the Salle des Mariages and the Salle des Fêtes are elaborately frescoed with appropriate subjects.

Political feeling, tending on one side to exalt civil marriage, takes this form of increasing the effect of the ceremony, a state of things having no counterpart with us. Certain of the larger towns or cities as they mostly are, or aspire to be, have recently attempted to decorate their public halls. Of these, the best known is Manchester Town Hall, the work of Mr. Alfred Waterhouse, R. A., which is decorated by a series of large frescos by the late Ford Madox Brown. They are executed in spirit fresco, also employed by Sir Frederic Leighton at South Kensington—it is a method invented by Mr. Gambier Parry, and which it is hoped will withstand the English climate. The subjects are suitable passages of Manchester history, leading off with Roman soldiers building the walls of the first city, a bold and vigorous treatment of the theme. Another subject is worthy of





ROOM HUNG THROUGHOUT IN TAPESTRY. GREAT COUNCIL CHAMBER, HARDWICK HALL.
(No. 26.)



STATE BEDROOM (JUNO) IN WHITE HOUSE, HARDWICK HALL
(No. 37)



TAPESTRY, WITH PLASTER DECORATED CEILING, HOLLAND HOUSE.
(No. 28.)



TAPESTRY IN ROOMS (OF A LATER DATE THAN THE BUILDING) OF ELENHEIM.



HEWELL GRANGE.
(No. 30.)

Bodley & Garner, Architects.

remark for its curious coloring of purple and yellow, a key rather affected by the pre-Raphaelites, introduced here by the quaint costume of the boys' school, the long coats being purple and the stockings yellow. Perhaps the most successful of these subjects is the local astronomer observing the transit with rude contrivances of his own make. A strong ray of light is passing through his instrument across the dark garret, which the astronomer is just about to enter. As to his scheme, Mr. Madox Brown says that he kept the colors light, with the idea of suiting the style of the hall.

At Birmingham, a bold attempt has been made to employ native and youthful talent, the students of the municipal art school being the executants, under the general direction of the head master.

Other towns will probably proceed to rival these great undertakings with, we may hope, increased success. Certainly such work requires to be thorough and proposed from the outset. The forms of the surfaces, of the ceiling, the method of lighting the floor surface and all the details require to be fully considered between architect and painter.

For color decoration on a grand scale is not a matter of one or two isolated pictures, but is the complete expression of the whole interior. In the most recent large church in London, that of Holy Trinity in Sloane square, it was the hope of the late T. D. Sedding, its architect, to employ the talents of numerous decorative craftsmen and especially to have the powerful aid of Mr. Burne-Jones in painting a grand frieze round the church and also in decorating the chancel roof. It is to be hoped that in spite of the architects' death some part of the scheme may yet be executed.

We referred to the last of our public buildings, viz, the Imperial Institute, in the previous articles on architecture and sculpture, but in regard to painting it presents us at present with no more than a few single-figure panels on the elaborate vaulted roof of the staircase, which must be considered only as a beginning which will, we hope, be extended in the future.

An idea which we might borrow from the early Renaissance is the use of these large intersected coves, which were so common in Italy at that epoch, and whose surfaces are often admirably occupied by single figures in varying altitudes. No doubt the surface presents great difficulties to any artist unused to such work but as a master of his craft, he should be equal to it.

These coves have the advantage of being well placed and easily lighted, both of consideration in modern interiors.

A curious idea of to-day, just worth mentioning is to execute a grand fly-away subject like one of the frescos of the late Renaissance, in leaded and highly colored glass in the day-light of a hall or staircase, that method of lighting having become almost indispensable in modern buildings. Such a work involves of course as much skill in perspective and foreshortening as was employed in the previous age. We hardly venture to express any opinion as to the advisability of such a proceeding.

One thing we can condemn, and that is the common use of the heavens as a decorative adjunct in our ceilings. This is a phase of work executed by a class of Italians over here, who delight in such features as the rising of the sun, or the gathering of clouds for a storm, as the suitable covering in for an apartment, but although such ideas are as old as the Romans we find it hard to accept them as forms of artistic expression.

The utter inanities of restaurant decoration in London are often due to these workmen who decorate such places with sickly cupids, wreaths of flowers and other trappings. The restaurant of the South Kensington Museum is in strong contrast to such places, the "grill room," due to Mr. William Morris, is decorated with large panels of tiles painted in blue and white varied with pale reds and yellows, set in a paneling of polished walnut, and the whole scheme forms an admirable interior for such a purpose (No. 32). The subject of these panels, which are from the designs of Mr. E.



South Kensington Museum.

PANEL IN GLAZED TILE.

By E. J. Poynter.

Vol. IV.—2.—4.

(No. 32.)



DECORATIVE PAINTING, COMPTON CHURCH.
(No. 34.)

J. Poynter, R. A., is the Seasons, and the style is that of early Renaissance glass in France, consisting of figures decoratively treated in conventional architectural tabernacles. The room adjoining is more purely architectonic, having a ceiling of enamelled iron treated in early Italian style, and having windows of Renaissance glass with subjects in strong color set in a general surface of pale glass. The walls and columns are lined with glazed faience with detailed friezes and bands modelled by Messrs. Moody & Sykes.

The two frescos in the same museum by Sir Frederic Leighton, already referred to, constitute perhaps the most important work of the kind in England of to-day. In point of color, the one representing "war," which is mediæval in character, has purple and red and dark colors generally, while the companion fresco, "peace," which is Greek in character, is yellow and white, with blue for sea and sky, contrasted by angle groups of brown-skinned men. (Illustration No. 33.) These two frescos are thus extremely interesting to compare, being at opposite ends of the same hall. The latter unfortunately is only of decorated iron and glass and thus no general effect is produced as of some grand renaissance interior.

Those who wish to pursue the subject of English fresco art further will find at South Kensington the chief cartoons from the Westminster competition alluded to above, together with one of a mosaic by Mr. E. J. Poynter and some for stained glass by Mr. Burne-Jones.

There is also here a series of ceramic mosaic single-figure subjects in a wall arcade, contributed by various artists of the age more or less valuable or interesting. Here, too, are the Raphael cartoons, a priceless standard of decorative work, and one to which the decorative painters of to-day seem wholly unable to attain.

In summing up, it may be remembered that we were not very hopeful on the sculpture side, still less we fear can we be on the side of decorative painting on a large scale. Unless the future prove different to the past we

fancy that easel painting more or less decorative in character will continue to hold the only place in spite of the isolated efforts of artists in each generation.

While town halls are bare and churches are thought complete when the last window has been filled with stained glass and private houses are fields for wall-papers and tapestries, the fresco artist is likely to remain without any scope for the exercise of his talents.

Is it to be wondered at, then, that men of ability turn their thoughts, either at once to easel painting or else to such forms of art as mosaics, stained glass, tapestry, or wall papers, fields of art in which there is much to be done by giving to our architecture that adjunct of figure work and color which it lacks, forming interiors of a home-like character. One form of painting common in early Renaissance times remains, but is little followed and that is the painting in a decorative manner of smaller objects, as in cabinets, furniture, etc. For, except some pianos and such articles, decorated by artists of name, we hear of little of such work which however is a promising field for further effort.

Alfred Stevens painted some chimney pieces with figure work, and also other panels belonging to a general scheme, and though the work sounds unimportant to an ambitious artist, the renaissance examples show that it affords admirable opportunities for good work. Allied to such work are the reredos in our churches, too often treated only as easel pictures, while from the Renaissance in Spain we might borrow the idea of those immense retablos which would afford panels of sufficient scale for good figure work. We illustrate a modern example of reredos from a church by Mr. Norman Shaw (No. 34),

The influence of the early Renaissance is essentially decorative, for color and form are allied with architectural detail in close union, and dissolved only in the later age when such detail was ignored to give room for an excessive development of anatomy, perspective, and other, then new, and

progressing resources of the painters the arts, with painting, under the influence of the early Renaissance, while art. Now that these have become more or less commonplaces, it is at the same time striving for a style in surely the time to renew the alliance harmony with the best aims of modern of architecture, the centre point of all civilization and artistic development.

Banister F. Fletcher, A. R. I. B. A.





A TEMPLE OF THE TOKUGAWA AT NIKKO.



O not use the word *magnificent* until you have seen Nikko,* says the old Japanese proverb, Nikko being used comprehensively for the *temples* of that fair spot.† For though Nikko has ever furnished the "mise-en-scène" for all Japanese fairy tales, fairyland materializes when one stands before her shrines, and reaches its climax in the mausoleum of Iyeyasu.‡

This temple, like all others in Japan, is not a single building, but a collection situated on the terraced slope of a hill, and treated in regard to distribution as a feature of the landscape. High above the waters of the Daiyagawa it rises, with tier on tier of crimson lacquer and gold set jewel-like in grooves of giant *criptomerias* born two thousand years ago; while over all hangs that violet cathedral light one learns to love in the land of the Mikado. For distance in Japan is not rendered in Payne's gray or dirty white, but by violet, that gentlest of all solar lights; and at Nikko (with the exception of an occasional after-glow on sacred Nantaisan at the western vanishing point) all the warm colors of the perspective

seem to emanate from the temples themselves.

Honda Kadzusa no Suke may justly be styled the architect of this great masterpiece, superintendent of works being the term actually employed in the archives; for the Japanese, like the French before the days of Pierre Les-cot and Philibert de L'Orme, had no word exactly corresponding to our own term of architect.

Of Kadzusa, personally, little is positively known, save that he was an adherent of the Shogun Tokugawa Hidetada, but any question regarding his ability may be answered by quoting the epitaph of Sir Christopher Wren: "Si monumentum requæris, circumspice!"

Architecturally speaking, the temple of Iyeyasu is for the most part Buddhist, and from 1654 to 1868 was ruled by a Buddhist Abbot chosen from among the princes of the Imperial house; but after the revolution it was stripped of much artistic treasure, and (by a decree of the Mikado) converted into a Shinto place of worship.*

This change, however, was less radical than would at first appear, for in the early part of the ninth century, after Kobo Daishi had made his master-

* Nikko wo minai uchi wa, "Kekko to iuna."

† Nikko means Sun's brightness or splendor.

‡ Iyeyasu Shogun, statesman, lawgiver and patron of art, was born in the year 1542 and died in 1616. He was the founder of the great Tokugawa dynasty which controlled the destinies of Japan through two hundred and fifty years of unbroken peace, and started a renaissance in art only rivaled perhaps by the Medicis in the cinque cento. The period of the Iyeyasu Shogunate is often called the Periclean Age of Japanese art.

* Shinto was the indigenous religion of Japan before the introduction of Buddhism, and is practised at present in its greatest purity in the province of Satsuma. It is a combination of nature-worship, hero-worship and ancestor-worship, and numbers eight million deities in its calendar, all of whom have been incorporated in the pantheon of Japanese Buddhism. Its moral teaching is usually summed up in the words: "Follow your impulses, and obey the Mikado!"





ON-CHOZUYA, OR HOLY WATER CISTERN.

FIG. II.

stroke of reconciling Buddhism with Shintoism by teaching that Shinto deities were only varied manifestations of Buddha, the *art forms* of Buddhism, which had been imported from Corea, became in like manner grafted upon those of the rival faith, until each became so absorbed in the other, that it is difficult to-day to find more than two or three temples throughout the land that are not hybrid in this respect.

Even the temple of Iyeyasu is no exception to the rule, as is declared at the first approach by the granite "torii," a sort of Japanese propylaea composed of two columns, a lintel with projecting ends and a tie-beam, a thing of purely Shinto origin and symbolical of the early faith.

In old time the torii was always of wood and used (as the name would imply)* for a bird-rest, whereon perched fowls offered to the temple; but in later days, when the Buddhist cult grew more universal, its true significance and use was forgotten, and beauty of form commending it as a gateway, it was ever after employed for that purpose.

A typical bronze gateway or arch of the kind, inlaid with the crests of the Tokugawa in gold, stands in the first court. (Fig. I.)

Before entering what may be termed the *close* of the temple, a pagoda given by "Sakai Wakasa-no-Kami" (a stanch adherent of the Tokugawa clan), claims attention.

The Gojin-no-to, or pagodas of Japan differ from those of China in that they are almost invariably square, those in other countries being octagonal or round. Within stands what at first sight appears to be a column passing through the centre as a support; a careful examination, however, reveals it to be no column at all, but a heavy beam hung from the apex of the roof, like the tongue of a bell, so that in case of typhoons or earthquakes the centre of gravity is automatically raised or lowered according to the deflection of the building from the vertical, thereby preserving the whole in equilibrium.

The pagoda in question is composed of five stories, each set a little back within the lower, and girt about with galleries and overhanging eaves. A twisted spire forms the culmination, and the whole is lacquered in dull red, save the lower story, where the painted carvings of the bull, tiger, hare, etc., of the duodenary cycle disport themselves in pleasing distribution.

To ascend in to the first terraced court of the temple, the worshiper is compelled to pass through "Nio-mon" or gate of the two kings; so called from the statues of two heroes originally occupying the niches on either hand. The mode of worshipping these was to chew up a prayer printed on a small bit of tissue paper and then *throw* it or *spit* it at the god. If the paper adhered to the image owing to the saliva, it was thought that the petition would be answered.* These statues have now been removed to the temple of Iyemitsu and in their place stand the bronze "*Ama-Inu*" and "*Koma-Inu*," or Japanese and Korean dog, which are believed to guard the temple against demons.

It has been the usual custom for critics to make only a slight allusion to "Nio-mon" and pass hurriedly on to the more elaborately executed gate of "Yomeimon." But the former, like all things Japanese, is not without its own individuality, and (what is more important) comprises many of those qualities peculiarly characteristic of all the better class of Japanese buildings.

Like the "Yomeimon" (Fig. IV.), it is a species of "arc-de-triomphe" surmounted by a roof, without a single nail used in its construction. No foundation (in the American or European sense) hugs it to the earth; for Japanese houses are not built *in* the ground but *on* the ground, so that in case of typhoons or other convulsions of nature, they avoid being snapped off, and tend rather to slide.†

Twelve columns with lions and tapirs for capitals support and embellish

* This performance is still practised by the faithful.

† Mr. Y. Tsumaki, the government architect, informed the author that the Great Temple of Nara shifted its position a foot during a recent earthquake, and yet retained its strength and stability.

* *Torii* from *tori*, meaning a fowl.

"Nio-mon" externally; above which, in lieu of cornice, springs a riot of complicated corbelling; a nightmare of complexity to the inquisitive engineer.

Other animals, such as unicorns, tigers and elephants, carved with conventional freedom, contribute their quota to the scheme of decoration, to which must be added the fabulous "takaju," who are said to visit the earth only when a virtuous lord occupies the throne. But when everything is said, the real touch of genius (architecturally) is the roof. Not on account of its graceful curve, nor the manner in which the overhanging eaves blend and soften the tones of color; but from the dignity and distinction which it sheds over the whole mass, like the Renaissance top of the Giralda tower designed by Fernan Ruiz.

A fence thrown right and left of "Nio-mon," and painted in deep vermilion, encircles the first court; and here within, the mausoleum of Iyeyasu may be said to properly begin.

To the right stand the store and treasure houses, disposed in picturesque irregularity, rich with the carvings of Hidari Jingoro (the Grinling Gibbons of Japan); to the left, the stable of the sacred white pony, the "On-chozuya," and the Library of Buddhist Manuscripts clothed in crimson lacquer; while through the "torii," before mentioned, tiers of architectural loveliness rise in limitless perspective.

One fault is prone to present itself to the Occidental mind, namely: that all these buildings are of wood. But when it is understood that this choice of material is not from motives of economy but from necessity,* and that lacquer covering if renewed preserves wood to an age equal to that of stone,† further objection simply relapses into prejudice.

One exception to the wooden theory declares itself in the "On-chozuya"

or holy water cistern (Fig. II.), where the piers supporting the pavilion are of granite from the quarries of "Nagahata;" but these carry very little weight, are not built *in* the ground, and batter in the Egyptian fashion; a precaution usually taken throughout the island of Hondo.

The water-basin itself (a gift of the Prince of Hizen) likewise engages attention through being a single block of granite so delicate in adjustment that the water pours over all sides simultaneously. Its purpose is for purification before prayers, and in old days the Mikado personally performed the ceremony of ablution for his subjects, as a symbolic cleansing of the nation from sin. This custom no longer obtains, and at present each penitent performs his own lustration for himself. A small ladle is employed for rinsing out the mouth and pouring water over the hands, after which the believer goes to the shrine, rings a gong to attract the Deity's attention, and bowing low, silently offers prayer and supplication.

Above the "On-chozu-ya" springs a roof of graceful curve, composed of bamboo sheathed in copper, the ends of the rafters being embossed with the three Asarum leaves of the Tokugawa crest. Flowers and winged-dragons carved in relief fill the pediment, all so softly tinted that the color seems breathed on, rather than painted; while plates of burnished bronze, cunningly wrought, flash at intervals throughout the design in rays of golden brown.

A pebbly path leads by the Library of Buddhist scriptures called "Kyodo" (Fig. III.) (with its stone lanterns presented by the daimios)* and stops at a flight of steps climbing to the second court, where beauty is still in crescendo.

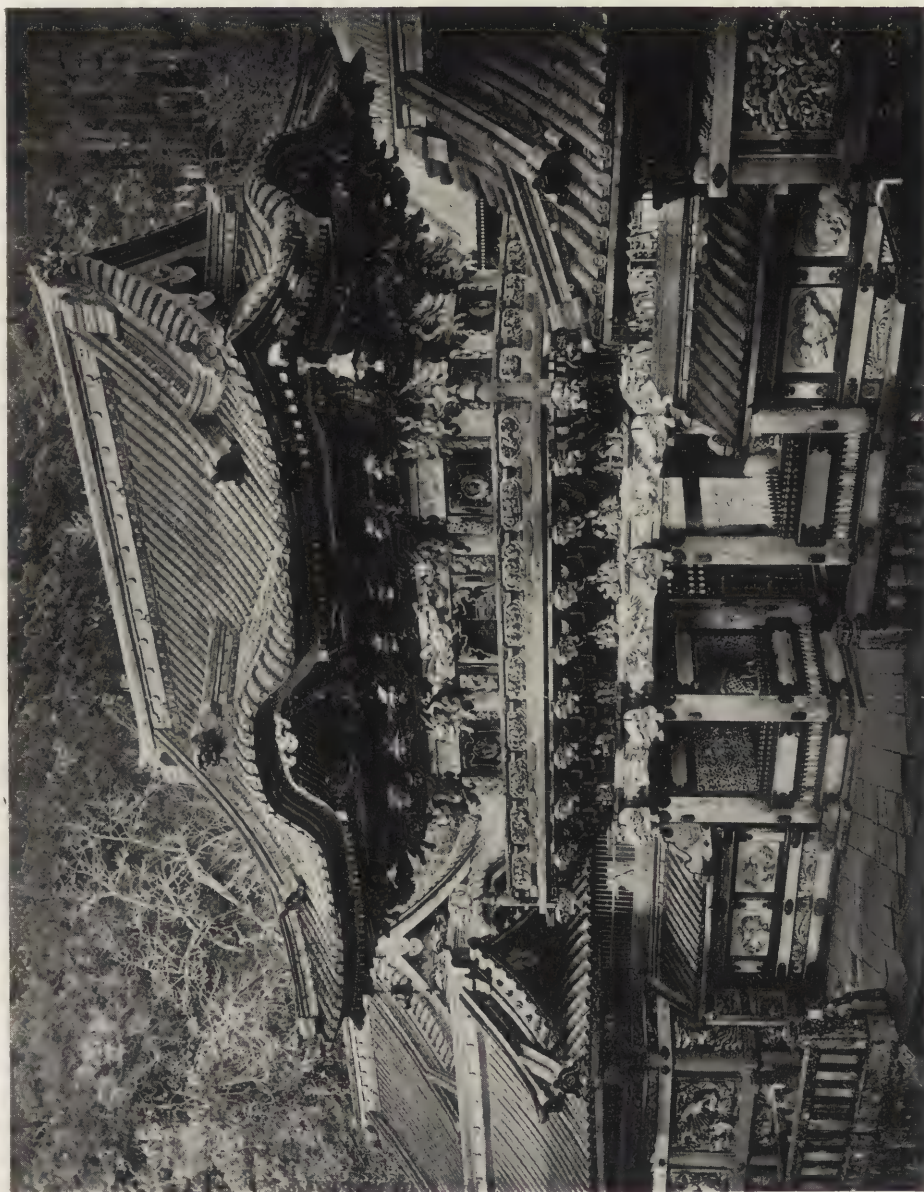
Here two belfries rise on either hand, suggestive of palanquins, one containing a bell, the other a drum which plays so important a part in the ritual of the "Nichiren" sect. Behind stands the temple of "Yakushi Nio-rai," and straight before, "Yomeimon"

* In the great earthquake at Nagoya the *stone* buildings were reduced practically to powder, the loss of life within them being almost unprecedented, while on the other hand many of the lighter wooden houses successfully resisted the shock.

† Many wooden temples of Japan are a thousand years old and the Great Temple of "Kwannon" has been in existence twelve centuries. The lacquer covering of these buildings is renewed every twenty years.

* There are 118 lanterns altogether in the inclosure, presented by various members of the nobility. When a nobleman committed a sin, he gave a lantern to the temple, and felt more comfortable.





YOMEIMON.
FIG. IV.

(Fig. IV.) the masterpiece of glyptic art, guarded by the lanterns of "Satsuma" and "Sendai."*

To give a true impression of Yomeimon (Fig IV.) in words is quite impossible, since it is a thing to be described with colors or music rather than nouns, attributive adjuncts and verbs. One can only catalogue its several parts, and leave synthesis to the patient reader.

Four columns form the principal constructive features of each façade. These, like everything about the building, are carved, but with a conventional design in such low relief as to preserve a certain severity and punctuate the architectural hyperbole of the rest. On one of these shafts (known as the "Mayoke-no hashira" or evil averting column), the design has been reversed, lest the too great perfection of the building should incur divine jealousy. On another, a tiger (chiseled with Genoese delicacy) is so cleverly disposed that an illusion of fur is effected by means of the natural grain of the wood. All bear capitals of carved "kirin" (hybrid monsters born of dragons and cows), and support a bracketed cornice, in which a row of the same beasts grimace at equal intervals above sculptured groups of Chinese sages. Over the heads of these rises a balustrade, suggesting a cameo linked-bracelet of Florentine workmanship, with panels pictorially precious wrought with birds, tangled leafage and children at play, and accentuated with points of light and shade like the work of Gabriel Rovezzano. This forms the perimeter of a second story gallery, on which give archways somewhat Saracenic in shape, flanked with columns crowned with *white dragons*. Another of these latter monsters indulges in picturesque contortions upon each architrave, his province of usefulness being here limited to the ornamental, though Japanese legend tells us that "when the *white dragon* breathes, the breath of his lungs goes into the earth and turns to gold."

More dragons and complicated cor-

bellings support the double raftered roof, which, twisted into graceful curves, dominates the whole and makes the picture more distinctly etched upon the mind.

But "who can convince of charm by enumerating the features of a face." These are the several component parts and their synopsis, minus the color scheme; which latter Percival Lowell has aptly described as "a jewel of a thousand rays, yet whose beauties blend into one, as the prismatic tints combine to white;" to give the true impression in words which "Yomeimon" exerts upon a beholder is artistically impossible, it can only be felt.

The third court to which "Yomeimon" gives access, is bounded on the north by a stone wall (on which rests the gate of "Karamon"), and on the other three sides by a cloister, in whose panels one sees the Buddhist love of birds, insects and all living things magnificently portrayed in sculpture. Indeed, it is this religious reverence for all things created that has probably brought Japanese sculpture to its present perfection and made it realistic when not decoratively conventional. Its birth is said to have been about 3 A. D., when the custom of burying alive* the wife and two or more servants with the deceased lord was still in vogue. For tradition tells us that on one of these occasions a courtier named "Izumo" made clay images and got them substituted for the human article, which stroke of ingenuity served the double purpose of ever after doing away with "Junshi" (or burial with the master), and of bringing about the evolution of plastic art.

A good example of Japanese wooden sculpture was formerly to be seen on the gate at the right of the court. This was a cat, carved by Hidari Jingoro, in such perfection (we are told) that it used to go off on nocturnal expeditions and not return until morning. On one of these occasions it remained away altogether, wherefore it has now been replaced by another of more sedentary habits, but less artistic worth.

* The bronze lanterns to the right were given by the Prince of Sendai in 1641, those to the left by the Prince of Satsuma.

* Sometimes the wife and servants were permitted to commit suicide before being buried.

Two buildings of medium architectural merit share the right of the court with the cat-gate; one is the theatre in which the "kagura," or sacred dance is performed by a native virgin of the Imperial house; the other covers an altar whereon aromatic woods are burned during prayer. Directly opposite rises a building inlaid against a dark green ground of foliage, called a "Kura" or "store-house," for the sacred chariots; but none of these, whether purposely or otherwise, detract from the masterful brilliancy of the sacred inclosure called "tamagaki,"* containing the oratory and chapel. A trellis (Fig. V.), divided into panels and roofed, surrounds this feature, which in itself is a work of art, each front compartment being webbed in the centre and framed above and below with bands of conventional decoration and polychromatic carving. The Gate of "Karamon" (Fig. VI.) clasps it together in the middle, tricked out in all the bravery of carved and inlaid Chinese woods; rare importations in Japan, where the "Keyaki" (a native elm) and camphor wood are the favorite materials for temples.

Gilt is used here and there in "Karamon" as well as in the adjacent walls, but sparingly for elegance, not lavishly for splendor as in the interior of the Oratory, the only two ways in which gilt should ever be used; for that medium occidental use of gilt, which only begets a tawdry monotony is unknown in the Far East.

Statuettes, flower-carving and embossed bronze, dispute the prestige of beauty on the door and lintel of "Karamon," while a sort of pterodactyl known as the *ninth-dragon* coils itself picturesquely around the columns. The name *ninth-dragon* is given to this particular animal to distinguish him from his brethren; for the female-dragon was believed always to bring forth litters of nine, each member of which had some especial passion or attribute; thus one delighted in music, and hence is usually to be found on the carved ornamentation of the "koto," or other musical instrument; another

had a passion for strong drink, and decorates in consequence the handles of wine cups. But the ninth-dragon, a sort of Japanese atlas, enjoyed most the bearing of great weights, which useful "penchant" has caused his image to be perpetuated upon the legs of tables and all kinds of constructive features.

Other fac-similes of this patient member of the dragon family serve as brackets in the porch of the temple proper, situated back of "Karamon," which building easily holds the first rank in Japanese architecture.

The plan includes an oratory with adjacent ante-rooms in the foreground; a sanctuary at the back, and an intervening apartment uniting the whole together.

Externally a certain simplicity rules (save in the case of doors which were richly arabesque), and a railed gallery, composed of columns* welded together with horizontal beams,† girdles the whole. The architrave suggests the panels of *Squarcione* of Padua wrought in painted sculpture, and supports the usual bracketed cornice; over all of which broods the great double-raftered roof, with tile-crested gables, and overhanging eaves, warming the whole with rich contralto tones of purple shadow.

But within (Fig. VII.) splendor reigns supreme, not so much as regards size and quantity, as material and quality; for Orientals never mistake bigness for greatness.

Nevertheless one thing is always a source of conjecture to the average foreigner, namely: how an entire congregation can be collected for service in the oratory, which though the largest room in the house, still measures only 42 by 27 feet. But it must be borne in mind that all the worshipers do not arrive together, nor remain throughout the whole ceremonial, and that even a large "mat suri" partakes rather of the nature of a social gathering *outside* the building, than a religious ceremony

* Intercolumniations are almost invariably one "Ken," which unit is composed of six "Shaku" or Japanese feet (a Shaku being equal to 11.93 inches.)

† A "Ken" is also subdivided into 22 minutes, and each minute into 22 seconds.

Diagonal bracing is unknown in Japan.

* The "tama-gaki" is 50 feet square.



PANELLED TERRACE.



ONE SIDE OF THE DOOR OF KARAMON.

FIG. VI.





LEFT SCROLL ROOM.
FIG. VIII.

within it ; hence it is a rare thing to see more than forty praying at a time inside the temple proper. Besides whatever Japanese religion was in the days of *Kobo Daishi*, *Shinran* or *Nichiren*, to-day it is little more than a form.

Indeed it is the commonest sight in the world to see a young girl leave some laughing, frolicsome party at the gate, and (after clapping her hands prostrating herself, and holding a moment or two of serious converse with the Deity), trip gaily back to join in the romp, or meet her lover at the tea-house. For about the temples are always grouped a number of tea-houses, where, as Mitford expresses it : "Mademoiselles Sugar, Wave of the Sea, Flower, Seashore and Chysanthemum are pressing in their invitations to enter and rest."

But though religion is not taken as seriously as it might be in Japan,* there is no apathy shown in regard to art (whether it be ecclesiastical or secular), as may be seen in the scheme of decoration used within the "heiden" or oratory (Fig. VII.). Gold is the neutral of the walls on which "kirin" painted by old masters of the Tosa school perform decorative gambols. Two bands of inlay and two of open-work carving form the frieze, which is pierced at intervals with columns gold-lacquered and capped with embossed bronze. Japanese brackets support a coved and coffered ceiling with dragons, magnificently involved, posing in each compartment on a blue ground; and the whole room is reflected like a monochrome in the black floor of polished lacquer.

Soft silk bordered mats, about six by three feet, protect the latter on ordinary occasions, and by their number declare the size of the room, for the mat is the unit of square-measure in Japanese architecture, it being customary to speak of a room of six, eight, or four and a-half *mats*, according to its square contents.

*It has been advanced that religion is less needed in Japan than in other lands. And the fact that there is not a profane word in the Japanese language ; that there are no strikes or unemployed ; that there is little or no discontent ; that the men do not get drunk like the Europeans or smoke opium like the Chinese ; and that it is the rarest thing in the world to see a Japanese lose his temper ; all goes far to render this possibility probable.

The decorations of the two ante-rooms (Figs. VIII. and IX.) are even more splendid in detail than those of the oratory, though the general constructive distribution is the same. And this brings us to the very practical question of price, a thing of great importance with us, but much simplified in Japan through the ingenuity of the pious priests.

A native proverb supplies the clue when it states that "the tortures of hell are graded according to the amount of money one has."* For masses are sold at high prices to the rich ; "matsuri" or temple festivals bring in money to the amount of twenty-five thousand dollars at a time, while at ceremonies attending the casting of bronze bells or statues of Buddha the high-born dames of "kuge" and "daimio" throw their jewels and gold ornaments into the crucible and pay huge sums for stamped handkerchiefs certifying to their presence on the occasion.

Perhaps the most picturesque of the many little ruses is the *Nagari kaajo*, or flowing invocation, a familiar sight to every visitor in Japan, and first introduced by the *Nichiren* sect. To clearly understand this it must first be borne in mind that when a woman dies in child-birth it is held to be a punishment for some sin committed either in this life or some previous existence, and that her soul remains in purgatory until released by the prayers of relatives, friends or others upon earth. To this end a napkin is stretched upon four stakes near some stream or runnel, accompanied by a wooden dipper, and every pious wayfarer is expected to pour a ladleful of water upon the bit of cloth and offer up prayer for as long a time as it takes the liquid to strain through. When the centre of the napkin becomes so worn away that the water flows through without hindrance the soul of the poor lady is believed to be free.

The pecuniary gain to the church arises from the fact that these napkins can only be purchased from the priests, and that whereas only those woven in the coarsest material can be obtained

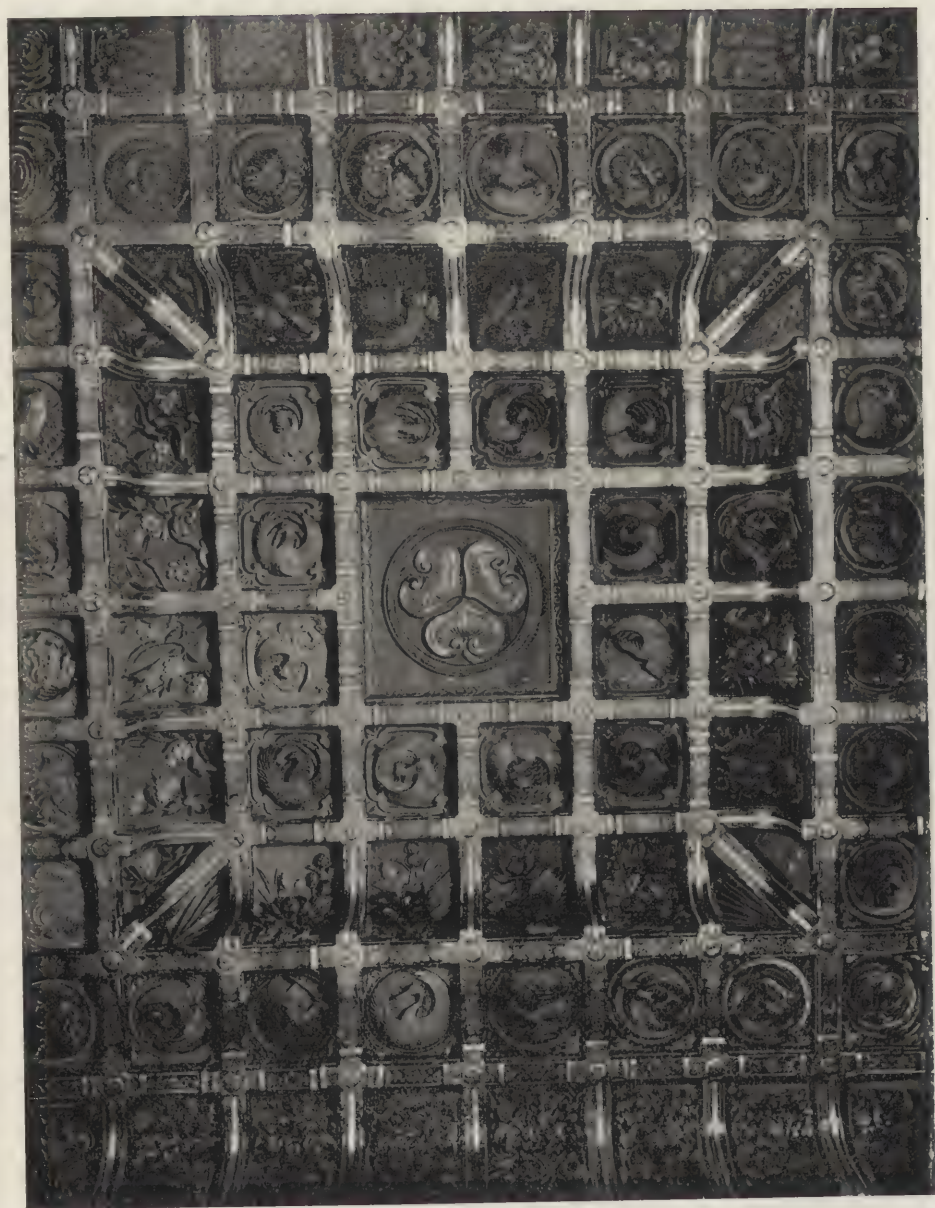
* *Jikogu no sata mo, kané shida'.*



A PANEL.

FIG. IX.





A CEILING IN THE TEMPLE.

FIG. XI.



MAUSOLEUM OF IVVASU

by the poor; others, scraped thin in the centre, and consisting of little more than paper, may be bought at high prices by the rich. But to return to the temple and its ante-rooms:

The most unique feature in each of the latter (Fig. VIII. and IX.) is the frieze of carved open-work, where certain panels are placed back to back with those of the oratory, and where every detail occupies exactly the same area as the corresponding detail of the frieze on the oratory side of the wall; the designs as a whole being totally different and "*sui generis*" in each.

Gilt in various shades is used with great prodigality throughout, and is laid over red surfaces for the sake of brilliancy. The ante-room to the left being dedicated to the Mikado, each ceiling coffer bristles with unconventional carvings of the imperial chrysanthemum, while eagles decorate the oaken panels of the walls (Fig. IX.). Its "*pendan*" (Fig. X.) being sacred to Iyeyasu, bears for the same reason the Tokugawa crest in the centre of its ceiling, with phenixes and flowers filling the other compartments, no two of which are alike (see Fig. XI.). Carved phenixes are likewise to be found emblazoned on the wall-panels, and were they executed in relief would be marvels of glyptic skill, but unfortunately these designs are for the most part only carving appliqué.

The two remaining rooms of the temple are treated architecturally in much the same style as the foregoing, save that the chapel has three subdivisions: the "*heiden*" (where hangs gilt "*gohei*" or cut paper, which is said to keep away evil); the sanctuary (where none but "*bonzes*" or priests may enter), and the reliquary shrine.

But none of these are considered appropriate to hold the remains of the

great Iyeyasu, the founder of Yedo, and hero of "*Sekigahara*."* Far away, on crest of the sacred hill of "*Hotoke Iwa*," far from the fret and bustle of the world, rises the bronze tomb of the great "*Shogun*," bathed in the purple light distilled from Heaven alone (Fig. XII).

"A dreamy place, where one may muse,
On all that might have been."

Stone galleries on flights of steps, bordered with giant trees three hundred feet high, lead to the little oratory standing before the grave. Up these steps in 1617 wound the funeral "*cortége*" of all the great lords and captains of the realm bearing the deified hero to his last resting place. For three whole days a choir of priests chanted the sacred hymn, repeating it ten thousand times, and from that day Iyeyasu, "*Noble of the first degree of the first rank, Light of the East, and Incarnation of Buddha*," has been worshiped by the faithful throughout the land of the Mikado.

The simplicity of the tomb itself strikes pleasantly on the mind after the tumultuous splendor preceding it, like the dreamy melody which follows the bursts of sonorous grandeur in Wagnerian music. But when everything is said, the greatest achievement of the whole mausoleum lies in the artistic distribution of the buildings. Great splashes of crimson and gold light up the dark green neutral of the mountain side, mellowed by the purples of the air, while the beauty of abstract proportion is ever present to govern and control all, and furnish an additional proof of how nature, art and refinement go ever hand in hand throughout the far away "*Land of the Morning*."

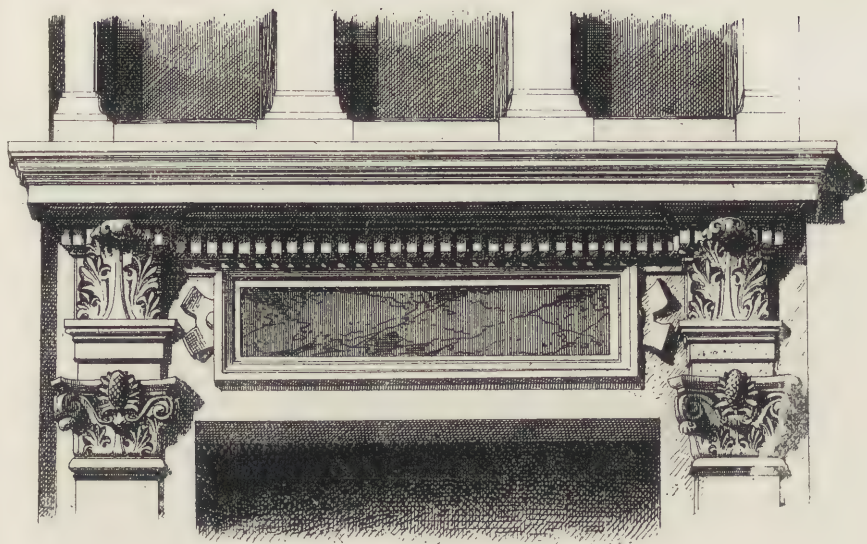
* *Sekigahara* was the most decisive battle in Japanese history.



Faubourg, St. Denis, Paris.

ADMINISTRATION BUILDING,
(Chemin de Fer de l'Est)

M. Gouvy, Architect.



INFLUENCE OF THE FRENCH SCHOOL ON ARCHITECTURE IN THE UNITED STATES.



HE influence of the French school upon our architecture, or more properly, the influence of the men who have been educated there, has already been very considerable, and in the future this

influence will doubtless be greater than in the past, but it will manifest itself in a different way. The school herself and her methods will be felt rather than the personality of the individual who has been trained there.

In the past, the men who have been educated in Paris have been pretty much the only ones in this country who have received any training in architecture, excepting such as might be picked up in the offices of men who had had no special training themselves.

In the future this will not be so, and the power of the individual to set the fashion will be lessened. Our students who go to Paris will not be satisfied with the superficial training heretofore received; they will stay longer and not be content with a mere smattering of what may be learned there.

The fact that so little of French feeling is to be seen in the work of Ameri-

cans who have been at the school has often been commented upon and has generally been ascribed to the different conditions which confront them when they return. That certain conditions here are different cannot be denied, but the great principles of the art are always the same, and it is these very principles which are so often abandoned by our young men after they return from Paris. When they come back they usually enter some prominent office here for a time to learn what is regarded as the practical side of architecture. There they are soon given to understand that French ways are not our ways; they see certain architects of the best standing and the greatest reputation making a business of the profession and designing in ways that will yield them the greatest financial return with the least expenditure of thought, some even reproducing European buildings as their own creation. In time these young men come to the conclusion that if they are to succeed they must adapt themselves to circumstances and give what the people seem to prefer. They find no national style and no restraints of any kind. Each man is permitted to erect on his



9 Rue Fortuny, Paris.

RESIDENCE,

M. Gouny, Architect.



105 Rue Notre-Dame-Des Champs, Paris.

RESIDENCE,

M. Pascal, Architect.

own property whatever suits his fancy without regard to any consideration as to whether or no the structure may tend to the perversion of public taste. They find few people who know or care much about architecture except when they have a house to build for themselves, in which case they must have something odd, which is what generally stands for picturesque, or else simple and chaste, which as often means dry.

Our traditions are few and our history of architecture is short.

In colonial times architecture here was generally good. In those days common sense was a factor in design. Suitable buildings were required rather than picturesque ones. The country had recently been wrested from the savages, and the colonists, as prosperity increased, were desirous of erecting buildings which should appear to be designed for the occupancy of civilized creatures.

The materials for building were collected with difficulty and were often even brought from Europe. The builders endeavored to obtain the most for their pains in the comforts and refinements of civilization and they worked straight to that end without affectation, for professional architects were scarce. Classic architecture was in vogue at home, as England was called, so classic details were used here, but modified and refined in the most naïve and natural way to adapt them to wood. The result of all this was generally a building symmetrical in plan, bold in outline and stamped with a character of refinement and originality which goes to make our architecture of this epoch compare favorably, in its humble way, with any architecture of the same date in the old world.

After the war these traditions soon died out, very little interest was taken in architecture until it began to show itself again some time in the thirties, following what was known in England as the classic revival, when we too, in our turn, discovered that the Grecian temple was the correct model for every class of building, from a church to a wooden cottage.

After these curious productions came the brownstone fronts and iron fronts for the city, while the so-called French roof and cupola flourished in the country.

The people were busy developing a continent and cared little for the æsthetics; all love for and appreciation of art had died out as completely as they ever have died or can die out among people who are not savages. In the midst of such surroundings we could scarcely be expected to produce any great works of architecture.

After the civil war Americans began to travel abroad in considerable numbers and a renewed interest in architecture soon became apparent, manifesting itself in precisely the way which might have been expected under the circumstances.

The so-called Queen Anne style was introduced.

Architecture in the time of Queen Anne, having reached probably the lowest state of debasement and degradation ever known in a civilized country, appealed strongly to our tastes, and upon it was founded the style with which we are all familiar. Some original characteristics might be claimed for the American variety which do not appear in the genuine article. The buildings are for the most part far more illogical. Probably no such ridiculous structures were ever erected before. The guiding idea seems to have been, or one may say, seems to be, to pile together in an unstudied heap, roofs, gables, towers, bay windows, projections, etc., with the utmost degree of confusion, in order to secure what is regarded as a picturesque result. The success in this line has been very considerable, and is something of which most Americans are extremely proud. Architecture is regarded as the one fine art which has made real progress among us.

The advent of the elevator opened a new field to American genius, and our architects for some years have been trying to solve the impossible problem of building structures all out of proportion to the width of the streets and which at the same time shall be successful as works of art. In a more

civilized community where the arts are fostered, such greed on the part of the land owners to secure more than their legitimate share of light and space at the expense of their neighbors and the public in general, would have been promptly suppressed; not so here. With us it is allowed to go on without let or hindrance until some day we shall awake to the fact that to continue in this course means the conversion of our streets into dismal ravines and the congestion of traffic in thoroughfares already too contracted. Even now an irreparable evil has been committed and the city has been permanently disfigured by these monstrous overgrown structures, which, ugly in themselves, dwarf into insignificance and injuriously affect in appearance and value all neighboring buildings of more modest and reasonable proportions.

What then has been the influence of the French school as exercised through our men who have been educated there, and how far are they responsible for this state of affairs?

This influence has certainly not been what one might have expected, for not only are the final results often far removed from the teachings of the school, but what is perhaps more remarkable, the modern French style of architecture is not imitated here. We have no structures which resemble the modern buildings of France. Even in the work of those of our men who have received their training in France, one can find but little trace of French influence so far as style is concerned. In general the work of these men shows perhaps more refinement and sobriety, a greater facility and more careful study, than that of those who have not received similar advantages, but in other respects there is little difference. Their designs sometimes indicate a leaning towards archæology and again often bear a striking resemblance to modern English, Italian and Austrian work, but not to that of the French, which is the more strange as almost all of these men profess great fondness and admiration for French architecture of the present day. The explanation of this seeming inconsistency doubtless lies in

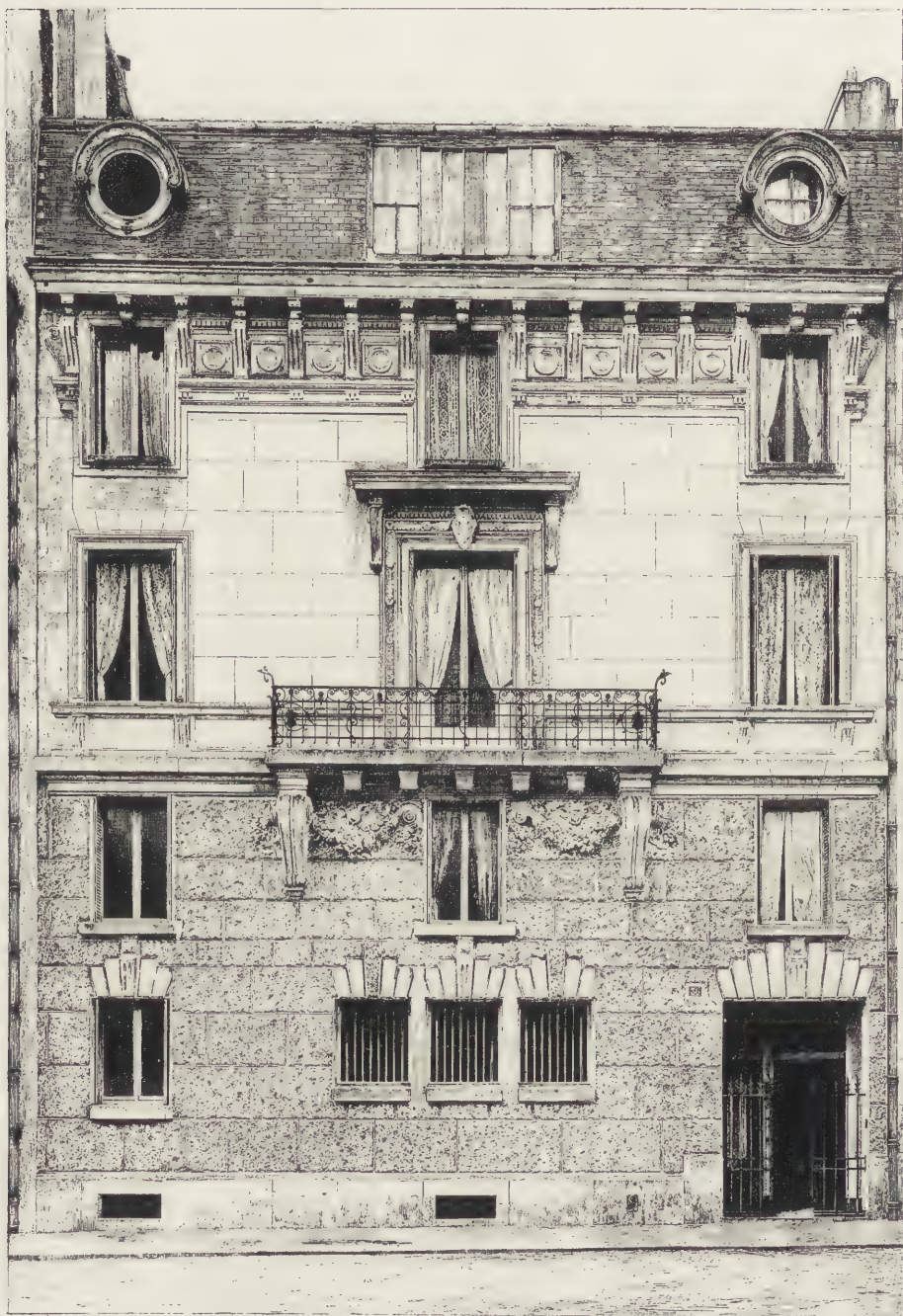
the fact that French architecture of to-day is more distinctly national than any other, and not so easy to acquire as the Vignolesque styles of Austria and Italy and the semi-Dutch architecture of England. Our students do not stay long enough at the school to acquire the style or to become thoroughly imbued with the French spirit, neither are they of French blood, so the work of Frenchifying architecture in America, so much dreaded by certain ignorant writers on the subject, has not yet begun.

Among the first Americans to be received at the school was Mr. Richardson, who subsequently exercised a most extraordinary influence upon the art in this country.

It was unfortunate that Mr. Richardson drew his inspiration from the source he did. He was a man of ability and could doubtless have done quite as well, if not better, had he adopted a more refined and suitable style.

The Romanesque architecture of the south of France was the work of barbarians as they were slowly working their way out of the night which succeeded the fall of the Roman Empire, and however well suited it was to those people, it is entirely out of accord with the spirit and thought of this century, and totally unsuited to the manners, customs and climate of our country. It was out of date and abandoned in France itself before the end of the twelfth century, and unless we have gone backwards it cannot be suited to this.

Mr. Richardson's work was popular, but the very fact of his having chosen such a *parti* for this country and time shows, I think all critics must concede, that his ability as an architect was misdirected, to say the least. His own work was often good, if work can be called good which was fundamentally wrong, but of the work of his followers what can be said? They have covered this fair land with structures which will appal future ages. Mr. Richardson's example stimulated them to exploit the mine from which he drew his ideas, and a wonderfully rich field they found it, full of strange and curious



36 Boulevard des Invalides, Paris.

RESIDENCE,

C. Mewes, Architect.



Cours-la-Reine and La Rue Bayard, Paris.

RESIDENCE,

C. Mewes, Architect.

things, interesting and instructive, too, in their way, and highly creditable to the semi-barbarous people who made them, for their work, though generally clumsy and savage, is almost always interesting and impressive. The builders, under the influence of a gloomy superstition, were working out the problems before them in the best way they could, with the means at their disposal, but the problems were not those of the nineteenth century, nor of the United States of America.

These considerations seem to have had small weight with Mr. Richardson's followers. Indeed the most unsuitable features were the most admired and the most exaggerated. We have fairly "out-heroded Herod;" our work is more barbarous than that of the barbarians themselves. We glory in conceits which cannot be justified on any reasonable grounds. Buildings in cities have rough hewn walls like those of a fortress or a town. Towers are used *ad nauseam* and on every kind of building; profiles have lost all pretense at refinement and are often simply rough hewn rolls of stone; grotesque figures are used without rhyme or reason, porches are carried on columns fit to bear the nave of a great church, doorways of dwellings are made to look like the entrances to caverns, and their windows like those of jails; columns are swollen and often appear ready to burst, and the combination would be comical were it not painful to behold. In short, millions are sunk yearly in erecting monuments to perpetuate the want of taste and the folly of this generation.

To the French school are ascribed many things which are not justly her due. Many of our architects have an entirely erroneous idea of her methods and aims. She is often judged by the works of those of us who have been received there, and many of our sins are visited upon her head. To her has been ascribed much of the responsibility for the buildings of the late Chicago Exhibition, nor can it be denied that they were due in a great measure to her influence, yet these buildings were as far as possible removed from

her principles, and it was in France that they were most vigorously denounced.

The French mind and method of thought is pre-eminently logical. Good taste contains a large admixture of common sense. A thing which is not reasonable, suitable, convenient, proper and right for the purposes to which it is to be applied cannot be very good. This is the most severe and searching test which can be applied to works of architecture, and only the greatest buildings in every age can stand it.

Perhaps we can point to no better illustration of this logical quality of the French mind as applied to design and construction, than the buildings for their last Paris Exhibition. These buildings were in themselves an illustration of the discoveries and resources which modern science has placed at the disposal of the architect, and a most successful attempt at the application of these discoveries to the science of building and the fine art architecture. They had two chief characteristics:

First—They were strictly modern in design and construction.

Second—They were honestly what they pretended to be, buildings for a fair in the last years of the nineteenth century.

Neither of these characteristics were to be found in the buildings of the Chicago Exhibition, and it was precisely for this reason that they were not admired by the French and not on account of any absurd feeling of jealousy. At present we are no more able to compete with the French in architecture, than we are in painting or sculpture. We could, and did make a larger exhibition than the last French one, just as we could, if we felt disposed, make a larger picture than any which they have thought it worth while to make, but farther than this we are not at present able to go.

It is asserted by people who ought to know better, that the French school teaches only a dry classicism, that it is bound hand and foot to the doctrines of Palladio or Vignola. Could anything be farther from the truth? Let any impartial man compare the designs for the two exhibitions above



61 Rue Ampere, Paris.

A PAINTER'S RESIDENCE,

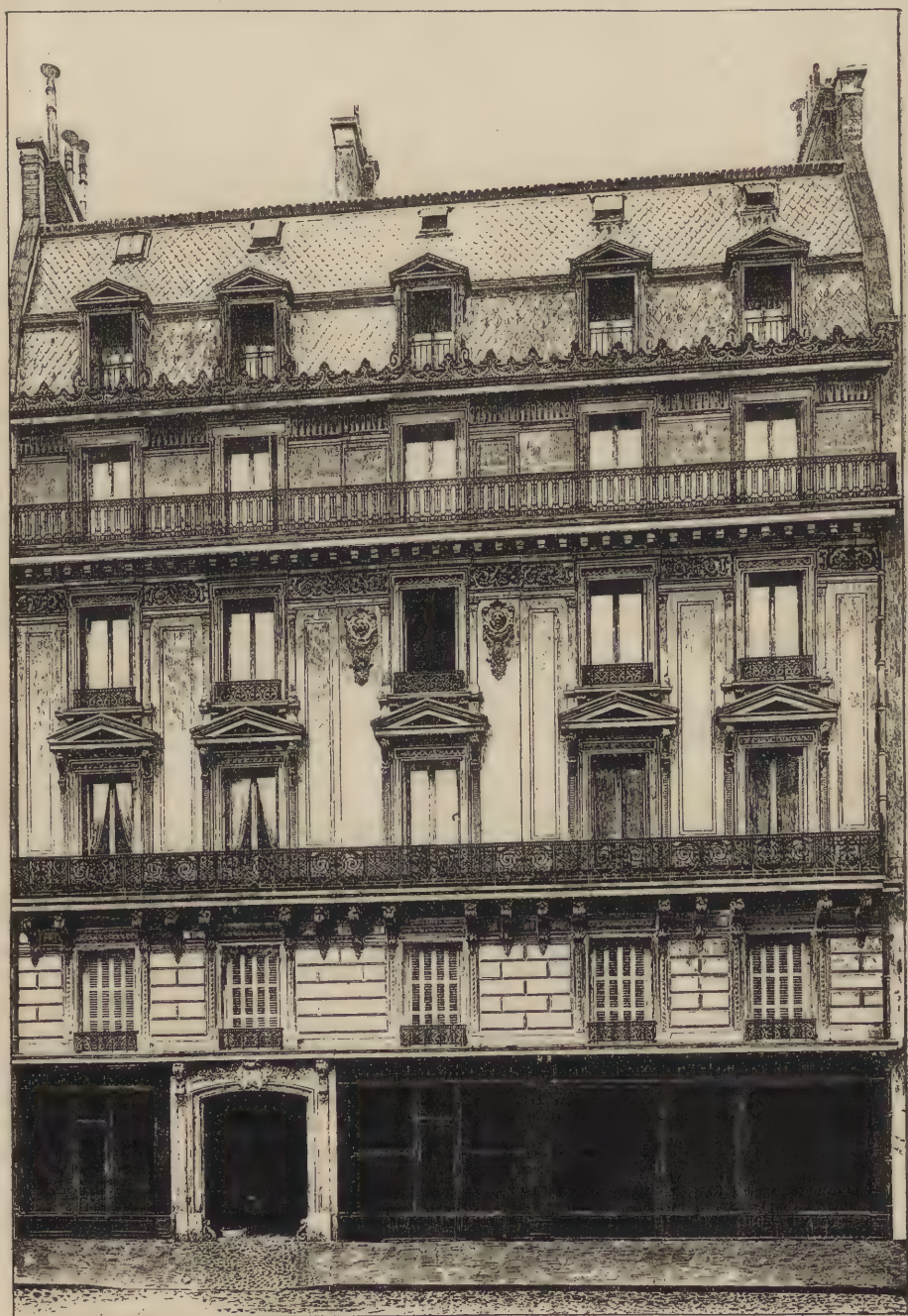
E. Sauvestre, Architect.



96 Boulevard des Batignolles, Paris.

RESIDENCE,

P. Heneux, Architect.



referred to and say which nation seems to have the strongest leaning towards dry classical architecture.

It is true that in French work one sees the classic feeling strongly developed, indeed pervading almost every design, be the motive inspired from the Gothic or any other style, but this feeling is the spirit of classic work, not its dry bores. It is a spirit of refinement, of study, a searching for the purity of line, scale, proportion, and for the fitness of things; it stands for vigor and originality, founded on sound principles of good taste and education. It is architecture not by the rule of thumb, nor is it servile copies of buildings ancient and modern. It has not, in short, the characteristics of our attempts at classic architecture, which may well be called dry.

It ill becomes us to criticise the French in matters of art. Let us rather cultivate humility in speaking of our betters, and learn from them that honesty is a quality in design. If architecture in this country is to be elevated to a high plane, we must adopt the same honest methods and noble aims which are encouraged at the French school.

What the school does teach is a glorious Renaissance of the nineteenth century. She has already entered upon the course prescribed for her by Charles Blanc some fifteen or twenty years ago, when, after summing up the wealth of documents and the resources of science now placed at the disposal of the architect, he says: "How can one despair of our architecture now, when we remember that the knowledge of these beautiful models is entirely recent and that the true Renaissance does not date beyond thirty years. Guided by an intelligent study and luminous criticism armed at all points, our school has before her the most illustrious career. She can henceforth, reconciling the rivalries, cover the most immense voids, sustain vaults at prodigious heights, employ for the future needs of an advancing humanity either the sublime effects of the Egyptian art, the expressions of strength, grace and magnificence invented by the Grecians, the richness

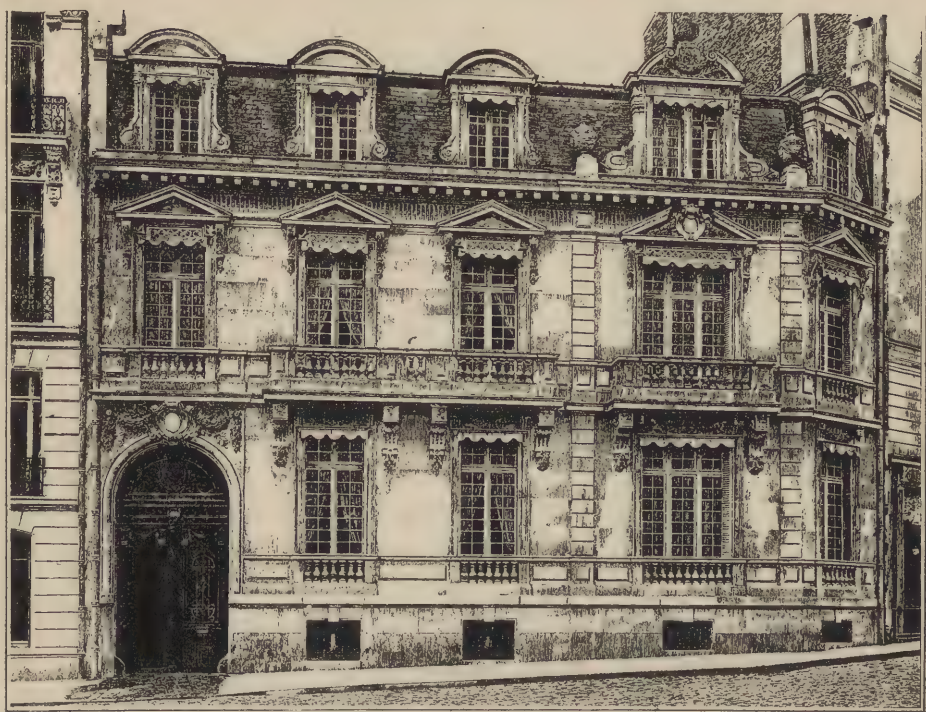
of the Arabian fantasy, the gravity of the Roman style, or the pathetic eloquence of the Gothic. But her regeneration can only be accomplished upon one condition, that she will not be led by the way of archæology into the pure imitation, but on the contrary seize the spirit of things, separating from such a mass of relics the many and grand ideas which can be disengaged from them."

A great work of architecture, like any other great work of art, is chiefly valuable for the seal of personality which it receives from its author. Thus a picture by Vandyke is valuable, not so much because it is well done as because it reflects Vandyke himself; he has sealed it with his seal, stamped it with his personality. The personality of Vandyke was high, noble and refined, therefore his works are priceless. They are the productions of an exalted genius. So the productions of other men are valuable as works of art just in proportion as the authors are great themselves and show themselves in their work.

Take the Paris Opera House as a case in point. The work is stamped all over with the personality of Charles Garnier, and although opinions may differ in regard to matters of detail, all will agree that its author is a man of genius; his production will always rank as a work of art.

If a man of inferior parts attempts to imitate this quality, he falls short of the mark, and instead of a work of genius we have simply a display of affectation or mannerism, which is as distressing as the other is interesting. Such are the characteristics which we see in the works of Mignard, Borromini and Prospero Bresciano.

None better than the men who preside over the French school know how to appreciate genius and originality in architectural design, for many of them have these talents to a greater or lesser degree themselves. Moreover they are ever on the alert to discover and stimulate such gifts in their pupils, but they are not foolish enough to suppose that even the most talented, were he endowed with the gifts of Michael Angelo himself, could bring those gifts



19 Avenue Marceau, Paris.

RESIDENCE,

P. Dechard, Architect.

to their true and perfect development without long study and practice.

Thus the school not only does not encourage that dry classicism which would reduce the most noble of the fine arts to a mathematical science, but her teaching is of a directly opposite nature. She desires of her pupils that they know everything, then forget all and be themselves; such teaching is inconsistent with anything but the most free and liberal spirit, and such a spirit pervades the École.

We are already under a deep debt of gratitude to France and the obligation increases yearly. With unparalleled generosity she opens the doors of her matchless school and invites Americans to come there and be educated at the expense of the French taxpayer. Nor are our young men blind to the opportunities thus afforded, for each year an increasing number of Americans are found seeking admission.

Five or six years ago those of our

architects who had been educated there raised a fund of six thousand dollars to found what is known as the "Prix Americain," a prize open only to Frenchmen. It was a graceful act of recognition on their part and was highly appreciated by the French with whom it has done much to confirm and strengthen the feeling of friendship and good-will for our students which has always existed at the school.

At the time the prize was founded the records showed that there were only about twenty Americans who had ever entered the school, recently the list had grown to nearly two hundred. There are twenty-five Americans there at the present time and probably as many more seeking admission. The movement is a growing one and likely to be fraught with great good for the cause of architecture in this country. Our students are staying longer than formerly, and we shall soon see the day when the first American will receive his



107 Avenue Henri Martin, Paris.

RESIDENCE.

L. Magne, Architect.



diploma from the French government. If this movement continues it will surely result in the foundation of a national school of architecture in this country, modeled after the *École des Beaux Arts*. Nor need any one be alarmed, for such a school will not be French, but American. If our students have learned well the lesson taught them in France, our school will appropriate the principles and spirit of the French school and be no slavish imitation. It will study the *parti* for America, and that *parti* will not be the imitation of French architecture, but the principles which the French apply to art. Principles which are universal, the same which guided the Grecians and all others who have achieved distinction in art. Form will be preferred to color, as is always the case in a high civilization, and reason will guide in design. The foundation of such a school will be the first step towards a national style, and in time America will take her place among the nations foremost in art. That we have the requisites of greatness is often made manifest in individual cases, but two stumbling blocks here lie in our path. Our young men are in too much of a hurry to make money, and we have a leaning towards English ideas; both are fatal to architectural art, and success can only be accomplished when these are removed.

Let our young men continue to go to Paris. Even if they cannot stay long they will still receive great benefits. They will see architecture in a new light, occupying her proper place as chief of the fine arts, and they will come back with higher aims and ideas. Each one who goes is a gain to the cause of art in this country, for upon one matter at least they will all be agreed. Having seen the immense advantages to be derived from such a school as the *École des Beaux Arts*, they will most earnestly desire the foundation of such a school in the United States, a school established and continued upon sound principles of common sense, where education is thorough, where the best men teach, where advancement is based on results, a school closely allied to the profes-

sion, provoking rivalries and constantly working for the advancement of art.

What we need here is artistic education; education of the thorough kind dispensed at the French school. When we have that we shall have a foundation on which to build, and will eventually evolve a national style. The time is now ripe for such a movement. Already the public is beginning to look askance at what has heretofore pleased. The vapid imaginings of uneducated and tasteless men, calling themselves architects, cannot much longer masquerade as works of art. The experiment of trying to create architectural style on a basis of ignorance has not been a success; we have been constantly sinking deeper in the mire. Soon a halt will be called. A true American can have no doubts as to the final result. Education will triumph in this country.

Before long Americans will discover that education is needed in the most difficult of the professions as well as in the others. They will cease to tolerate ignorant architects just as they have ceased to tolerate ignorant doctors or lawyers.

Is the taste of the nation a matter of no importance?

Should everyone be allowed to disfigure our cities with structures no matter how hideous?

If a man makes a bad statue or a poor picture, little harm is done; people need not look at them, they can be removed, but this is not so with works of architecture. The building must be seen, and the structure, if bad, wars continually against public taste. In communities which persist in disregarding this danger, the sense of and appreciation for the beautiful becomes blunted so that the public do not know the good from the bad. Such matters are regulated by law in France, and should be, and in time doubtless will be, so regulated here.

Let us license our architects just as we license our physicians or lawyers. Let us solve the high building problem by laws limiting the height in proportion to the width of the streets.

Let us appoint our most distinguished



105 Avenue de Neuilly, Paris.

RESIDENCE,

Paul Sedille, Architect.

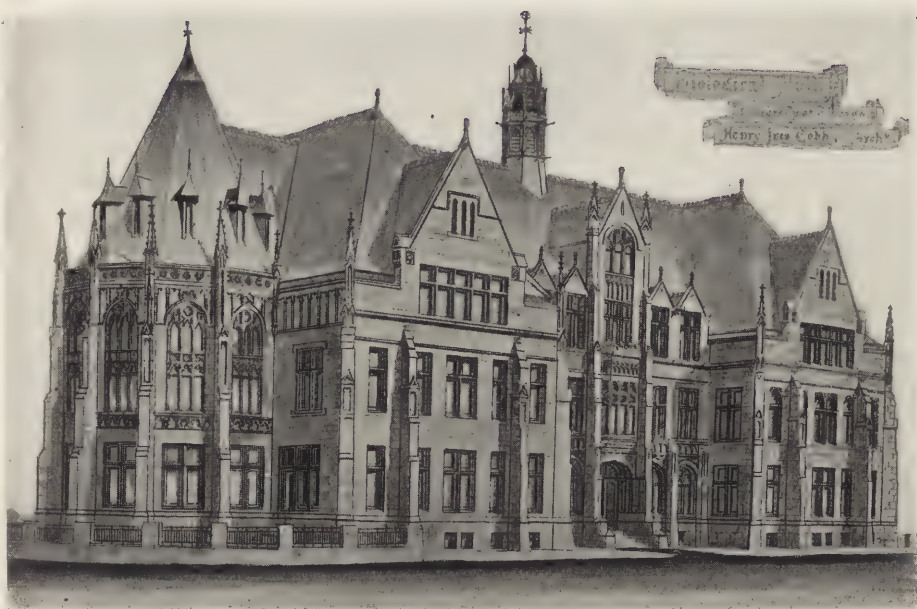
architect, City Architect, and let it be his duty to pass upon all proposed structures in regard to their artistic fitness for the place they are to occupy.

When this is done we will have made an immense step towards civilization in art.

France learned these lessons years ago, and we would do well to follow her example. "They order these matters better in France." The results of such legislation can be seen on the banks of the Seine, and if we are wise future generations will see and glory in a city no less beautiful here.

Ernest Flagg.





THE UNIVERSITY OF CHICAGO.

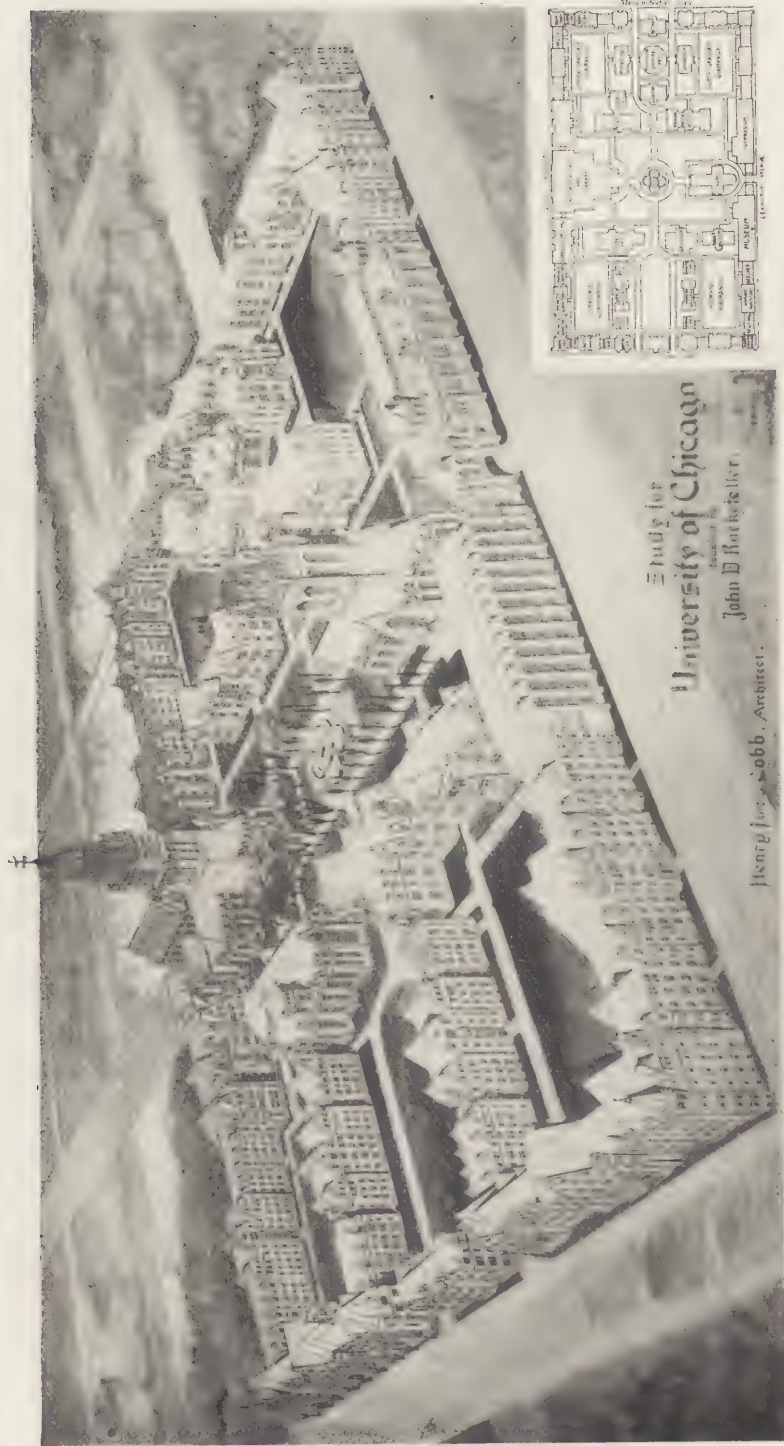


THE University of Chicago owes its foundation to the munificence of Mr. John D. Rockefeller and the energy and faith of the American Baptist Education Society represented by Reverend F. T. Gates and Reverend T. W. Goodspeed, the present secretary of the University. The plans for the new University of Chicago date from 1886, the year of the final extinction of the older institution bearing that name. In 1888 occurred the first conference between Mr. Rockefeller and Professor Harper, and in the same year the Board of the American Baptist Education Society gave its hearty approval to the effort to establish the University. In May, 1889, the society at its anniversary meeting in Boston ratified the action of its board, and Mr. Rockefeller pledged his first subscription of \$600,000, on condition that \$400,000 should be raised before July, 1890. This condition was complied with by the

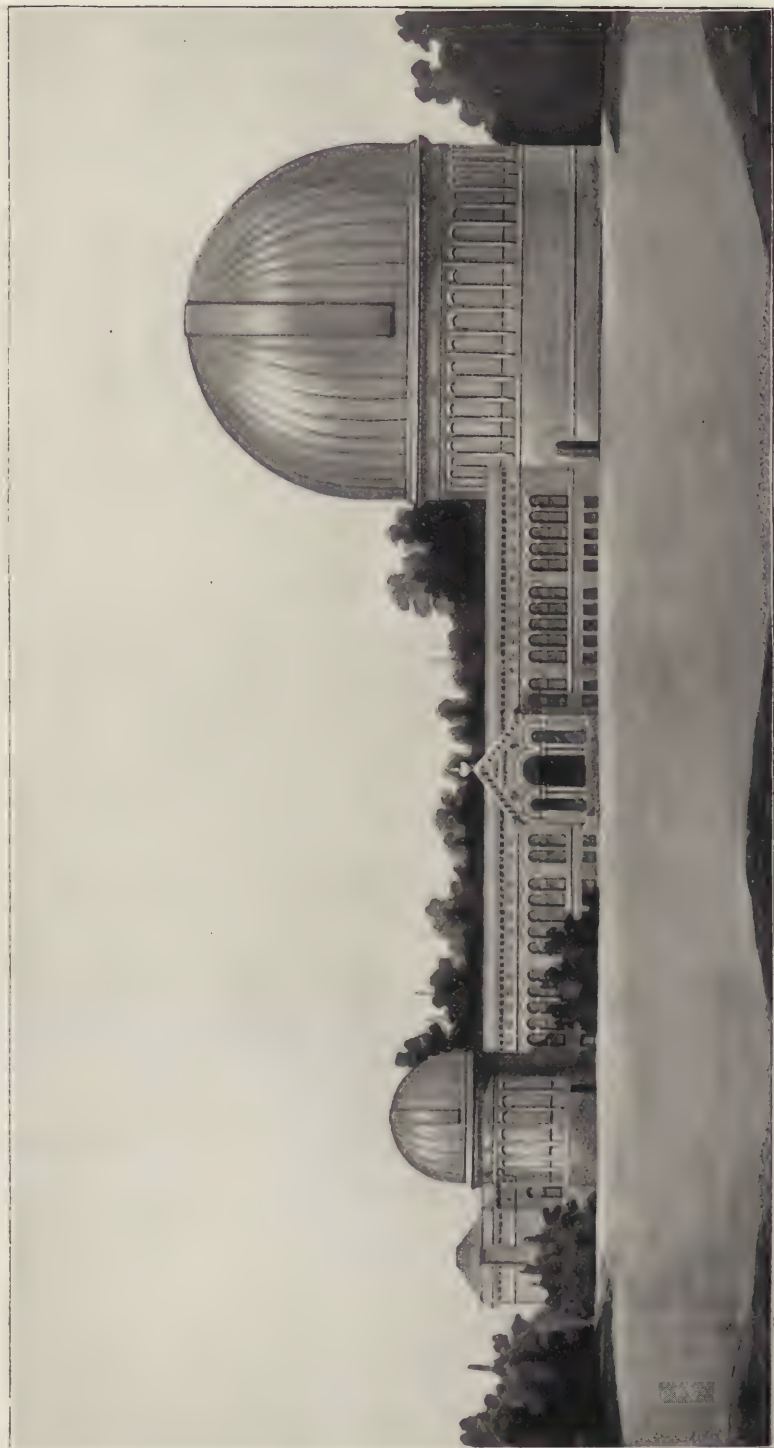
Education Society through its representative, Mr. Gates, assisted by a College Committee in Chicago represented by Dr. Goodspeed. A block and a-half of land was secured by the gift of Mr. Marshall Field, and two and a-half additional blocks were purchased, giving the University a campus of four blocks on the Midway Plaisance, between Ellis and Lexington avenues. A more appropriate situation could scarcely have been found.

The next step of importance in the history of the University was the election of Professor Harper, who had from the first been intimately connected with Mr. Rockefeller's plans, to the presidency of the institution, and his acceptance of the same in the spring of 1891. Before this Mr. Rockefeller had added a million dollars to his former subscription, and the Theological Seminary at Morgan Park had been incorporated with the University as its Divinity School, and preparations were at once made for its removal from its old quarters at Morgan Park to the University campus.

After President Harper entered upon



BIRD'S-EYE VIEW OF THE UNIVERSITY.



THE YERKES OBSERVATORY.

Henry Ives Cobb, Architect.

the duties of his office in July 1891, the work of organizing the institution was rapidly pushed forward. The trustees of the Ogden fund had already offered to appropriate seventy per cent of the estate, amounting to about \$1,500,000, for the founding of a Graduate School of Science. This offer was accepted. Mr. Rockefeller added during the year 1892 two further sub-

\$50,000, Mrs. Elizabeth C. Kelly \$50,000.

After these additions to its resources the University proceeded rapidly with the construction of its buildings, which had been begun in November, 1891, until at present there are ten structures on the campus, excluding the temporary library and gymnasium building. These are: Cobb Lecture

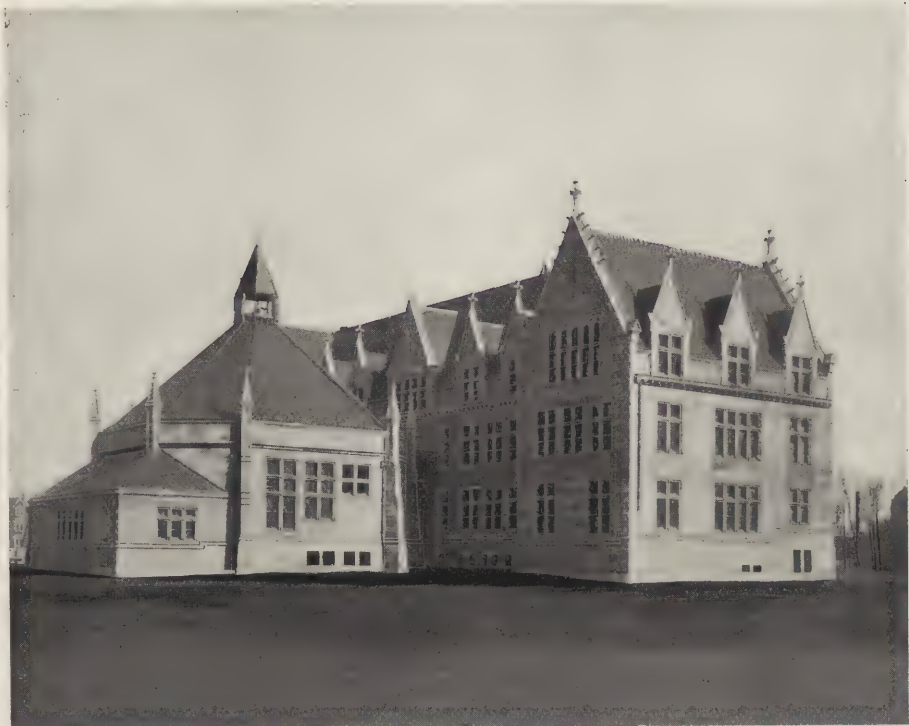


FRONT OF KENT CHEMICAL LABORATORY.

Henry Ives Cobb, Architect,

scriptions to the endowment fund, each of \$1,000,000. Mr. S. A. Kent undertook to provide the University with a Chemical Laboratory at a cost of about \$200,000. Mr. Marshall Field offered \$100,000 as the basis of a million dollar building fund, to which Mr. S. B. Cobb subscribed \$150,000, Mr. M. A. Ryerson \$150,000, Mr. G. C. Walker \$130,000, Mrs. N. S. Foster \$60,000, Mr. H. A. Rust \$50,000, Mrs. Henrietta Snell \$50,000, Mrs. Mary Beecher

Hall, Graduate Dormitory, Divinity Dormitory, Foster, Kelly and Beecher Halls for women, the Kent Laboratory, the Ryerson Physical Laboratory, Snell Hall and the Walker Museum. In the construction of the dormitories, the requirements of the social as well as the individual life of the students have been considered. The University system has also influenced the construction of the recreation buildings. As that system



REAR OF KENT CHEMICAL LABORATORY. Henry Ives Cobb, Architect.



AN INTERIOR, KENT CHEMICAL LABORATORY. Henry Ives Cobb, Architect.



ENTRANCE TO KENT CHEMICAL LABORATORY.

Henry Ives Cobb, Architect.



LARGE LECTURE HALL, KENT CHEMICAL LABORATORY.

Henry Ives Cobb, Architect.



CEILING OF THE LARGE LECTURE HALL, KENT CHEMICAL LABORATORY.

Henry Ives Cobb, Architect.

requires, among other things, small classes, there is an absence of large lecture halls. Many small class-rooms take their place.

After having thoroughly well established the financial condition of the University it became necessary to consider the architectural conditions which were likely to arise in carrying this great undertaking through. The Board

University Building, at the same time the Board had accepted and given consideration to all that had been presented, and as the subject of the new University Building had been brought well before the architects of the country there was no lack of plans to select from.

Mr. Henry Ives Cobb was chosen as the architect to carry out the wishes



SNELL HALL.

Henry Ives Cobb, Architect.

of Trustees was composed of many of the prominent business men of Chicago. They had at considerable trouble and expense gone very carefully into the matter of college building and the requirements needed to cover the field. Intelligent people had been sent abroad, and much thought, time and money expended to give them the information needed. Although no general competition was offered to the architects of the United States to submit plans for the

and plans of the Board, and to him in a large measure may be attributed the good taste and thoughtful work exhibited in the present University Building.

As we notice by the ground plan the entire plot is surrounded by a series of buildings which form a complete barrier to the outer world. The four quadrangles at either corner are faced on two sides by dormitory buildings and the inner portion of the col-



WALKER MUSEUM.

Henry Ives Cobb, Architect.



REAR VIEW OF WALKER MUSEUM.

Henry Ives Cobb, Architect.



MAIN HALL, WALKER MUSEUM.

Henry Ives Cobb, Architect.



KELLY HALL.

Henry Ives Cobb, Architect.

lege grounds are occupied by recitation, lecture and educational buildings, with the main University hall and library and the chapel forming the central group. The museum and gymnasium are so located that they are accessible from the outside without entering the college grounds proper; but all other buildings receive their entrances direct from the college grounds, and to reach these one has to pass through one of the seven main entrances.

The reason for this arrangement was to, as far as possible, exclude all outside conditions from the student when he had once entered the University grounds and so, likewise, was the style of architecture selected made as far as possible to remind one of the old English Universities of Cambridge and Oxford; in fact, to remove the mind of the student from the busy mercantile

conditions of Chicago and surround him by a peculiar air of quiet dignity which is so noticeable in old university buildings. When the quadrangles are completed this will be very marked and, as this style of English Gothic architecture easily takes on an air of age by the help of a few vines and weather stains, the effect will certainly be most restful and suggestive of university conditions. The illustrations show us most plainly how the buildings all harmonize, and the entrance doorway to Kent Chemical Hall serves as an excellent example of the ornamentation which has been used throughout. The interiors in most instances are very plain. More thought and care having been given to sanitary conditions, ventilating and hygienic conditions. In the interior of the present buildings there is an absolute absence of ornamentation of any kind, except perhaps in the



FOSTER HALL.

Henry Ives Cobb, Architect.



LECTURE ROOM IN COBB HALL.

Henry Ives Cobb, Architect.



REAR OF COBB HALL.

Henry Ives Cobb, Architect.



COBB LECTURE HALL.

Henry Ives Cobb, Architect.

large lecture hall of Kent Chemical Hall, where the arched ceiling, although simple in its way, still by comparison with the severity of the rest of the building gives one the feeling of being quite elaborate. In most instances, in the lecture-rooms and public-rooms the walls are finely finished brick in soft tones of red and yellow. The ceilings are generally finished in bright wood,

numerous kind friends of the University saw fit to purchase at the late exhibition in Chicago. Although at present it is in a state of chaos, in fact few specimens are unpacked and almost none can be said to be in place, still there is enough to make some little showing, and by the end of the year the museum will be quite filled. It is hardly necessary to enter into any considerable descrip-



RYERSON HALL.

Henry Ives Cobb, Architect.

and the whole effect is cool and restful, quite suggestive of thoughtful and studious conditions. The laboratories in Kent Chemical Hall are very finely appointed. There are some dozen similar to the one represented here, and every modern appliance that could be procured to add to their perfection of equipment can be found there. The Walker Museum, although very simple in its interior, affords an excellent space to exhibit the very rare collection the

tion of the buildings. The illustrations show quite plainly what they are. Ryerson Hall is perhaps generally considered the handsomest building so far erected, but Cobb Hall with the Graduate Dormitory and two Divinity Dormitories connected makes a very imposing effect. In Foster Hall, which is part of the Women's Dormitory, there is a fairly-good carved oak stairway and some little elaboration of entrance hall and drawing-room effect,



THE PRESIDENT'S HOUSE.

Henry Ives Cobb, Architect.



BEECHER HALL.

Henry Ives Cobb, Architect.

but nothing worthy of any special mention. Landscape architects and many workmen are preparing the grounds, laying out tennis courts, arranging flower beds and grouping foliage so that the campus is rapidly improving in appearance, and what was three years ago a piece of western prairie land without house and hardly without street is fast becoming a thoroughly well equipped University. All around it handsome buildings are springing into existence; beautiful residences are being erected, the streets and avenues are finely paved and the southern end of the grounds, which face the Midway Plaisance, will soon look out on a beautifully appointed park, as the South Park Commissioners are redeeming this strip of pleasure ground from its turmoil of last year

and laying it out in charming manner. The foundations for Professor Harper's house are completed and it is expected that his residence—a sketch of which is shown—will be finished by January 1st.

The house of Professor J. L. Laughlin which faces the college grounds is a noticeable example of the class of architecture which is fast springing up in the neighborhood, and no doubt by the time the University buildings are completed all available space surrounding them will be occupied by delightful residences. When we think that the first contract for the erection of any of the University buildings was let November 20th, 1891, it is no great stretch of the imagination to picture the completion of the present plans in the near future.

Chas. E. Jenkins.



ARCHITECTURAL ABERRATIONS.

No. XII.—COLLEGE OF ST. FRANCIS XAVIER.



One may reasonably expect to see educated architecture in a place of education, even if it be not a place of specifically architectural education. There is a

particular incongruity in crude and illiterate collegiate architecture. For which reason, among others, the new buildings of the College of St. Francis Xavier, in West Fifteenth street, New York, are especially striking and painful, and clamor for rebuke. If this pile of gamboge and grey were a factory, or a tenement house, it would still be lamentable and painful, but it would not be worth talking about. The speculative builder or the contract builder does not pretend to be engaged in inculcating morals or æsthetics. His humble aim is to make as much money as he can, subject only to the Building Department and the Board of Health, and his monstrosities are only what are to be expected of him. But when the most reckless and thoughtless performance of the speculative builder are recalled by the work of what calls itself a college, the case becomes one for public protest.

Certainly the speculative builder in his maddest moments has done nothing worse than the new buildings for the college of St. Francis Xavier. In the first place, since one must begin somewhere and thus establish an order of precedency among its vices, it has nothing whatever to do with the other buildings of the same institution. The church on Sixteenth street and the schools in Fifteenth street, are all parts of the same scheme, one may assume, since they are all called after the same name. The church and the schools together might have formed an imposing and interesting architectural group, and one would have supposed that the first effort of their projectors would have been to make of them an architectural group of some kind. A quarter of a century ago the buildings consisted of a church in the style that is known in Europe as Jesuit architecture, and was indeed an imitation of the Jesuit Church in Rome, and a school building in the rear, still standing, in German Romanesque, pretty evidently imitated, not with great skill or success, from those familiar examples of that style, the American Exchange Bank and the Continental Bank, and executed

in the same material, New Brunswick sandstone, while the church, if we remember aright, was in Caen stone or possibly in stucco "to that effect." When the old church was burned the present edifice was erected in grey stone and in a sumptuous Roman style. The designer is not to be blamed, very likely for not conforming in any respect to the subordinate school building, which did not form an architectural appendage to the church of which it adjoined the rear. But the latest designer, if it be not absurd to call him so, had an opportunity to enhance the effect of his own work, not indeed by conforming to the church, of which the part visible from Fifteenth street was only a brick back without pretense of architecture but by conforming to the existing school building either in material, or design, or at any rate by prolonging some principal lines, and getting the advantage of the unusual frontage of something like 300 feet.

No consideration of this character, it is evident, has ever entered his pure mind. He had to do a new school building of 150 feet front, and a connecting link, in the form of a quadrangle-gateway and lodge, of 75 feet front between this and the existing building. He not only did not make his works conform in any respect to the existing building, but he did not make them conform to each other. His large four-story school is built of grey stone and the hottest colored bricks he could find, a brick so hot in color and so uniform that it seems to have been painted instead of being the unsophisticated product of the kiln. In the two story central building he has used the same brick, but has substituted a sandstone of the color of the old building for the greystone of the new, so that the architectural relation between the three buildings is reduced to its minimum, and no one of them has the effect of belonging to either of the others.

The big building, "surprised by itself," is about as bad in design as bad can be. The grey stone basement is comparatively quiet, being at least monochromatic in color and simple in form. But even this derives a restlessness from its design. The openings in

the curtain walls are so huddled and the arches at the ends so devoid of visible abutment that even this basement, strong and quiet compared with the superstructure, looks weak and uneasy. But for all that it is the most tolerable piece of work in the building. The next story is of brick with flat arches over the openings, of brick in the curtain walls and of terra cotta at the centre and terminal pavilions. The third division is of two stories in one, its vertical dimension emphasized by brick pilasters with terra cotta capitals, the openings covered with round arches in terra cotta, and this is surmounted by a tin frieze and parapet. The central pavilion, it is evident, has been the chief object of design, and accordingly it is the chief terror of the front. The basement shows two pairs of square-headed and very lanky openings, flanking pairs of granite columns standing free and all projected from the wall, with which they are connected by pieces of entablature, but not connected at all with each other, so that the waiter at the door is entirely exposed to the weather and disabused of any notion he might rashly have entertained that the feature was a porch and not a purely monumental fantasia. The opening that forms the doorway is closed by a very depressed three-centred arch, between the pseudo classic orders, that is Gothic if it be anything though furnished with a foliated key-stone. Over this in the next story is a large bull's eye at the centre, in a terra cotta frame, that is quite inexplicable. One would imagine it to be a staircase light if he did not see the staircase cheerfully cutting with its diagonal line the adjoining window, a square-headed, lanky, flat-arched opening. The upper division of this centre is, if possible, more awful than what is below. The fluted bases of the lanky two-story pilasters run through one of the stories, or nearly half way up, the ridiculous bull's eye is repeated, and there is a double-arched opening above it.

What we have called the quadrangle gateway shows a diversity of detail but the same spirit. It is flanked by pilasters, with a vertical slit ingeniously gouged out of the centre so as effect-

ally to deprive them of the aspect of strength or of repose. The openings of the upper story are round arches with protruding keystones carrying crosses.

The prevailing expression of the new buildings is one of extreme meanness. This is due in great part to the huddling of the windows. Seventeen openings, some of them quite large, cannot be arranged in a front of 150 feet without giving the front a very pinched appearance. This appearance is greatly aggravated by the union of the upper two stories into one architectural division. This union would in any case preclude the establishment of a harmonious proportion between the united stories and the two single and separated stories below. In this case it emphasizes the pinched and huddled appearance of the openings, which is still further emphasized by the perfectly wanton introduction of the two-story pilasters. Again, the character of meanness is necessarily imparted by the use in the crowning member of sheet-metal, and it is unnecessarily imparted by the mechanical and lifeless design and execution of the detail. This in the larger building consists mainly of the archivolts of the windows, and the panels that sub-divide the two-story openings, and that are decorated with the well-known dish-

towel ornament of a festoon hung up by the ends. All this detail looks so mean that one is apt to suppose it to be of sheet-metal and it takes close inspection to determine that it is in fact of terra-cotta. Nay, such is the lifelessness of the design that the arches of the two-story building seem to be of cast-iron though they are really of cut stone. To make sheet-metal look like cut stone or moulded clay is a feat beyond the reach of the constructor of shams. The converse feat of vulgarizing moulded clay or cut stone to look like sheet-metal does not seem very easy either; but it has here been accomplished.

There are many audacities in this preposterous erection, but the boldest thing that has been done in it is to inscribe the sheet-metal monument over the centre of the school building "A. M. D. G.," which, lest the wayfaring man might not understand it, is repeated and spelt out, also in tin, over the gateway: *Ad majorem Dei gloriam*. To dedicate a signally illiterate building to educational purposes is bad enough; but to dedicate with an exhibition of sham and meanness and vulgarity to the greater glory of the Creator is impudence that borders upon blasphemy.



CORRESPONDENCE.

CHICAGO, August 27, 1894.

Editor ARCHITECTURAL RECORD:

I notice in your Quarterly of June 30th, the paper entitled, "Wasted Opportunities, No. III," referring to office building, northeast corner La Salle and Monroe streets, Chicago. The author gives an alternative plan, which he designates "as it should be."

It is to be regretted that he chooses such arbitrary phrases as "wasted opportunities" and "as it should be," for there is at least ample opportunity for differing with him very radically.

It is safe to say that the alternative plan he presents would not have been accepted by the owners. An office building must be planned to satisfy the requirements of the city where it is built and the class of tenants for which it is designed. It is safe to say that had the alternative plan been used instead of the one carried out, the building would not have been rented to the same class of tenants, nor to the same extent, nor would it have produced as large a revenue.

The building in question is located in the very center of what is known as the "Insurance district." There is no location for an office building superior to it in the city of Chicago, and it was built with the expectation that it would be occupied by the most desirable tenants in the city. The plan was only adopted after an exhaustive study, many experimental plans having been made, some of them containing features of the plan designated by your author as, "as it should be."

The objections to his alternative plan for the building in question, however good it might be in some cities and some situations, are as follows:

Large wastage of the Monroe street frontage, where the ground is worth, for interior lots, \$5,000 per front foot, and advancing. The objections of your author to south frontage for offices is not sustained by the facts in Chicago.

Passenger elevators inadequate and located too far from the Monroe street entrance, the five

elevators in the "as it should be" plan occupying the same length, and less width than three of those constructed. Experience in the building indicates that their elevator system is correct. Cars run very rapidly and at busy times quite full. No diminution can be accepted.

Entire omission of the freight elevator, which is dismissed by your author as "wholly unnecessary in an office building." Evidently he is not familiar with the Chicago office building. For example, in the building in question, an entire upper story and a portion of the roof space is leased for the General Western office of a large Insurance Company. Their business of receiving all the blanks and stationery for their extensive Western department, re-boxing it and distributing it to the many local offices, alone demands a freight elevator. The moving in and out of tenants; the receipt of samples, models, etc., by the different offices representing manufacturers, etc.; the taking up of ice and drinking water to the different offices; removal of sweepings, and a long list besides, make a freight elevator one of the essentials, only to be omitted when it cannot find a location without very serious damage.

The long, narrow, dark halls is another very serious objection to the alternative plan, and the one that enables your author to get the additional space, and is so serious that it would reduce the building at once to second or third class in the character of the tenants and the rental per square foot.

What we can understand of his schedule of differences reduced to dollars is not in accord with our views and is not sustained by the facts.

It is quite impracticable for a person at a distance, how well informed generally, to criticise correctly a building erected in another city for a purpose and for a class of tenants with which he is not familiar. The alternative plan your author proposes would have ruined that building, which has the reputation to-day of being the best general office building in the city.

W. L. B. J.



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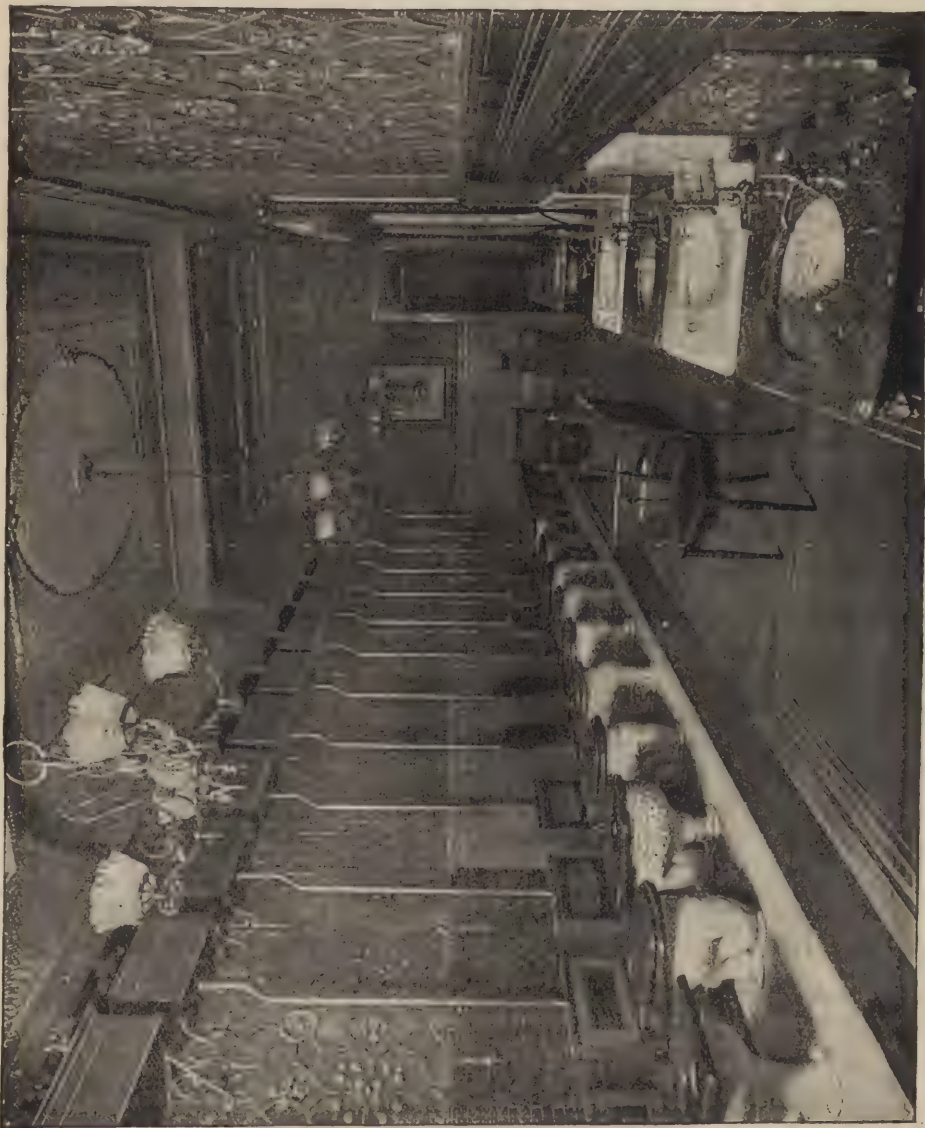
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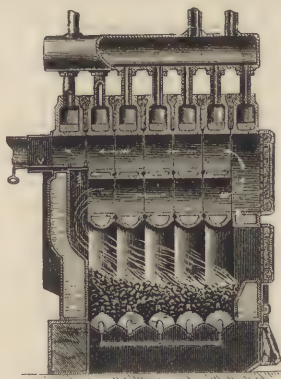
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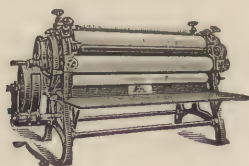
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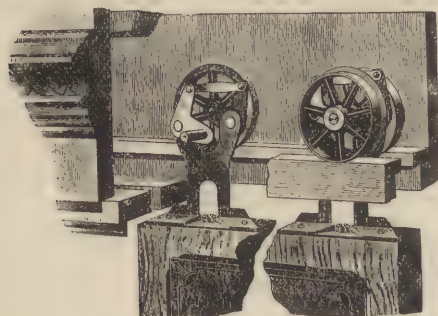
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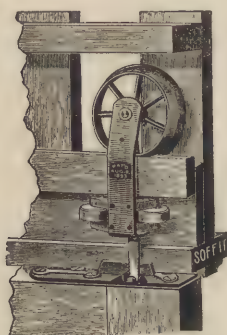
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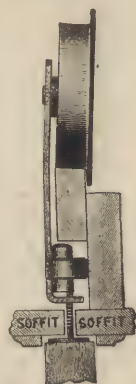
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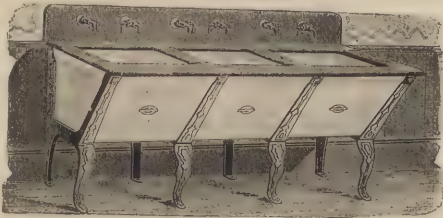


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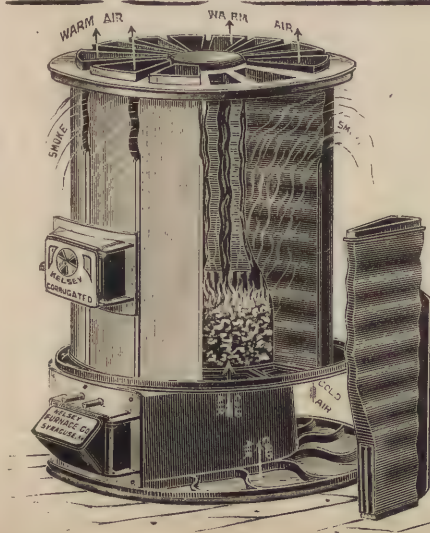
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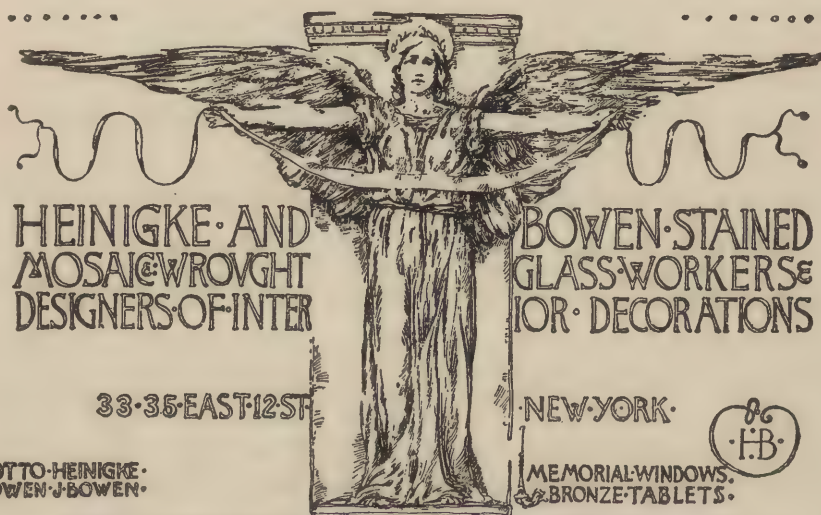


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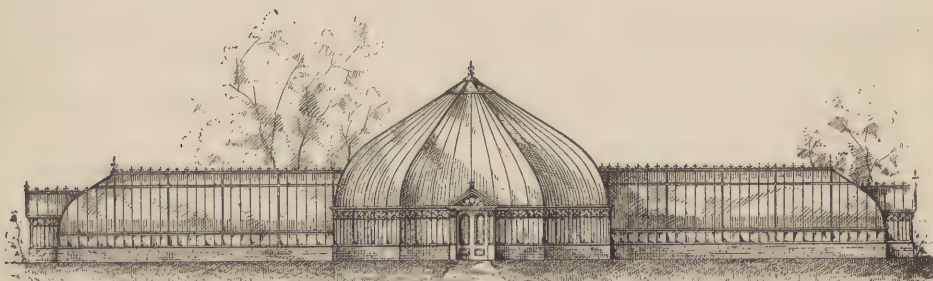
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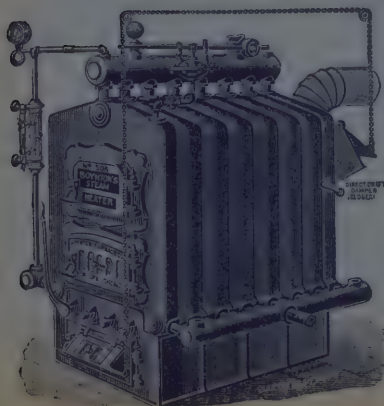
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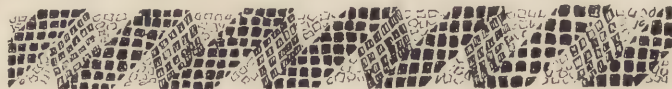
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SURETY CO.'S BUILDING now in course of

SURETY CO.'S BUILDING, now in course of construction, N. Y. City.

construction, N. Y. City,
And in many others, but the above list is a fair repre-

And in many others, but the above list is a fair representation.

To the Editors of the American Architect:—

To avoid stains appearing on the surfaces of limestone, no natural cement must be used, and no artificial cement with the exception of **Lafarge**.

In certain cases, when the supervision has been untiring, the results have been satisfactory. In others with the same specifications, the results have been the reverse, which has been considered due to the carelessness of the workmen in not covering entirely the common cement with the Lafarge.

Finally, it has been generally noticed that in the course of time the stains disappear more or less.

Yours,

F. W. CHANDLER.

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81 & 83 Fulton St., N. Y. City.

THE MYCENIAN MARBLE CO. manufactures in enduring cement DECORATIVE ART MARBLES, imitating the natural so closely that the trained eye of the expert is required to distinguish them from the natural. They are used for WAINSCOTING, COLUMNS, PILASTERS, and decorative marble work generally.

OFFICE AND WORKS:

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Bath-Tubs.

IN house construction more than in anything else the article cheapest at first cost is very seldom the best. It is the subsequent repairs which determine the true cost. A dollar or two saved in the first outlay is a dollar saved very injudiciously, if each year entails a repair account that becomes increasingly heavy. This sort of false economy is remarkably prevalent, particularly in constructions handed over without any guarantee to whichever contractor or mechanic first quotes the satisfactory price. To guard yourself against this you must stipulate for a specific article. In arranging for your bath-tubs, galvanized iron and copper boilers, specify the STEEL CLAD BATH and the AMERICAN galvanized iron and copper range boilers and see that you get them, and then you will get the best in the market. The Steel Clad Bath is thoroughly made of metal, steel on the outside and planished copper within, the only wood about it being the polished hardwood rim. It is very strong, practically indestructible, impervious to decay, warp or shrinkage, and is absolutely rust proof. It is mounted on four ornamental iron feet with the exterior susceptible of being handsomely decorated and set up open and free from all encasement. In this way the tub presents as handsome an appearance as the more expensive bath and at a very much less cost.

The Steel-Clad Bath Company,

447-453 West 26th Street,
New York.

Strictly Pure White Lead Paint.

THE painting of a dwelling is by no means the least important item in its finishing, outside or in. Every owner knows this. It is a common and disappointing experience to have paint quickly fade, crack and scale from the walls, too frequently the result of using the various "ready-mixed" paints, or some one of the many brands of white-lead (so-called), all of them misleading in character, being composed largely of Barytes and other deleterious materials.

There is but one way to secure a lasting and satisfactory job, and that is to use only a well-established brand of *pure* white-lead, *pure* linseed oil and *pure* colors. The cost is no more, and the best is always the cheapest. Here's the true economy of it. Any of the following brands are genuine, and are just as good now as they were when you or your father were boys :

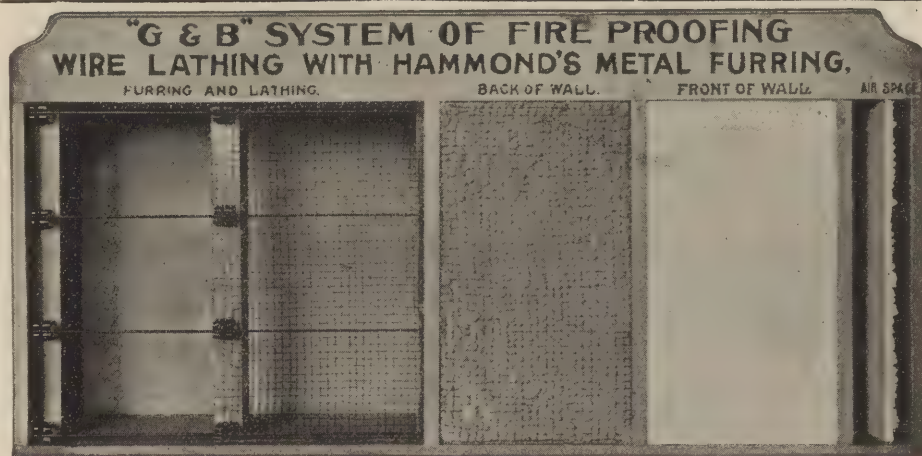
"ANCHOR" (Cincinnati).
"ARMSTRONG & McKELVY" (Pittsburgh).
"ATLANTIC" (New York).
"BEYMER-BAUMAN" (Pittsburgh).
"BRADLEY" (New York).
"BROOKLYN" (New York).
"COLLIER" (St. Louis).
"CORNELL" (Buffalo).
"DAVIS-CHAMBERS" (Pittsburgh).
"ECKSTEIN" (Cincinnati).
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"MISSOURI" (St. Louis).
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"SHIPMAN" (Chicago).
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If you want colored paint, tint any of the above strictly pure leads with National Lead Co.'s Pure White Lead Tinting Colors, a pound of color to 25 pounds of lead. The best merchants sell them, the best painters use them. Saves time and annoyance in matching shades, and insures the best paint that is possible to put on wood.

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WHERE applied, the plaster is held so securely in place that extreme heat or a sudden jar cannot dislodge it. Hence fire will not reach the timbers ; cracked walls and falling plaster are avoided, also the walls never present a mottled appearance so commonly noticed. The Lathing, being composed of small steel wire, is entirely inclosed in the plaster. The furring sets the wall away, affords an air-space, thus insulating the timbers and permitting the plaster to pass through the fine meshes over their face. It also forms a rigid and even surface for the lathing and plaster. No wood furring needed.

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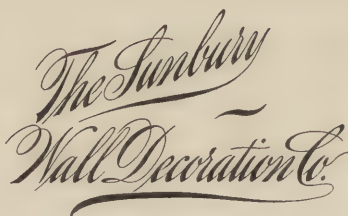
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HAVE come to stay, chiefly because they stay where they are put. You cannot "bank" on plaster. Some is good and some is not. You can only wait and see whether it "sticks" or not. As I have covered several thousand ceilings where plaster did *not* stick, I know that many are bad. Better use metal in the first place, and have a sure thing. It is very unpleasant to have a large lump of plaster fall on to one's piano or dining table, or on to the showcase in the store, or upon your head, when in church, and the repairing of it is equally disagreeable. **Durability and good taste** are now the aims of reputable architects. With a metal ceiling you may be sure of the first. My large variety of patterns, long experience and your assistance will insure the second. In corresponding, give not only the size of the rooms, but as many other particulars as possible.

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New Catalogue ready.

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MOSAIC tile floors, wainscoting, etc., produce attractive interior effects, whether in dwellings, churches, or other public buildings, and is justly much admired; but a bar to its wider and more general use has been its high, prohibitory cost. Because of this fact specifications are constantly being altered, and desired work of this character is either cut down in extent, or stricken out from plans altogether. Yet there is no reason why the architect's taste or the individual's wishes in this particular should be either modified or prohibited. The "Manhattan" mosaic marble and mosaic tile supplies a new material and a new idea. Produced at moderate cost, bright in color, firm, hard and durable, it is used with singularly fine effect and superior results in the best class of work wherever the older and higher-priced material has formerly been employed. An artistic and substantial hall wainscoting and floor in either your suburban or city home is at all times available, and at a cost so modest as to be within the reach of all. Write to us for particulars. We maintain fine exhibits at our office, and at the Building Material Exhibit, 276 to 282 Washington Street, Brooklyn.

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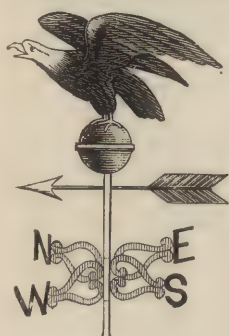
Paragon Self-Retaining Dumb-Waiters.

THE importance of placing a good dumb-waiter in a dwelling—one that will *satisfactorily* do the work required, and *keep in order*, needs no argument. The correctness of this proposition has probably been demonstrated in an object-lesson of broken crockery in your past experience. If you are building in the country, don't trust too implicitly in the judgment of your local builder, who frequently knows little about a well-equipped dumb-waiter, and is cheerfully sanguine that any kind (or thing) will do. Why not leave that fixture a blank in the specifications until you have had time to send for one of our catalogues? Perhaps we can offer you a few useful suggestions if you will write us the particulars of the case; or, refer you to the nearest dealer, where you can inspect the apparatus.

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reliable service. I have been manufacturing weather vanes, tower ornaments and finials for over thirty years, and in quality, durability and taste in design and finish they have become the standard goods of their kind. My catalogue, to be had for the asking, furnishes several hundred different designs. Write for it.

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(Patent applied for.)

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Write for catalogue and prices.

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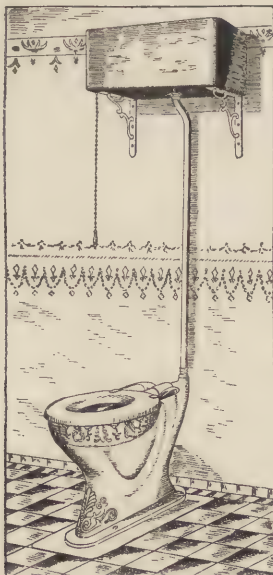
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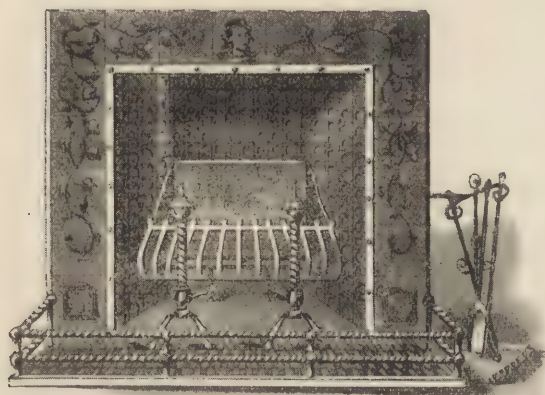
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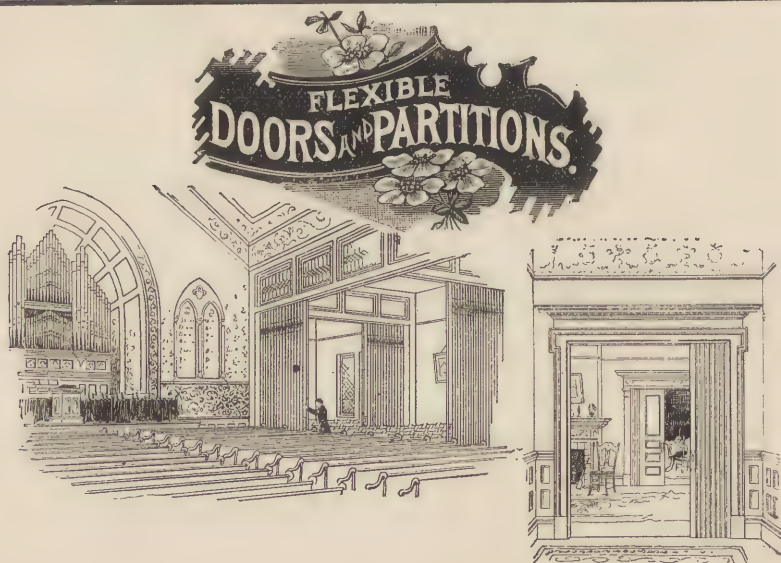
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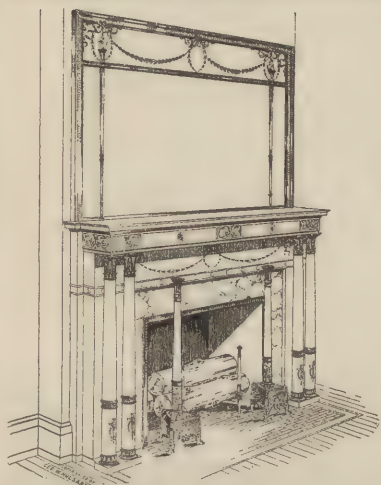
MANTELS.

WHAT is the centre-point of a room? the spot upon which the eye fixes itself and around which everything in the room, as it were, groups itself? Obvious answer—the mantel and fireplace. Strange, then, isn't it? that people are so careless of, often so indifferent to, the character, or more correctly, the characterless character of this centre-piece. They pay—for it is *they* that pay, no matter who does the ordering—\$75, \$100 or \$150 for the parlor mantel in an average suburban house, and nine times out of ten get—what? A crude construction of little, shapeless spindles, shelves and beveled glass thrown together. A thing of no attractiveness, of no artistic merit whatever.

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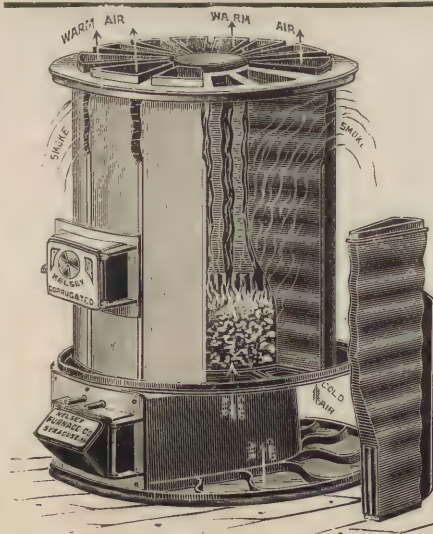
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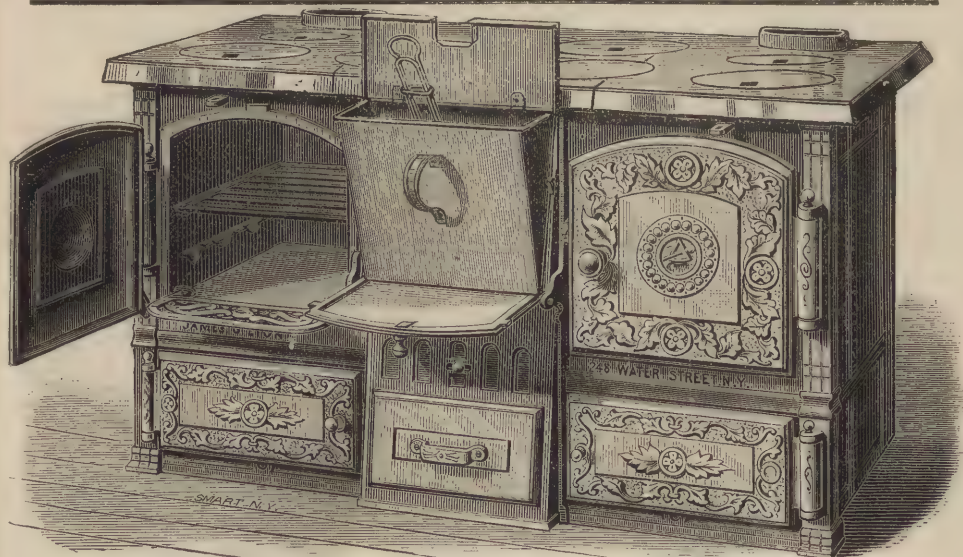
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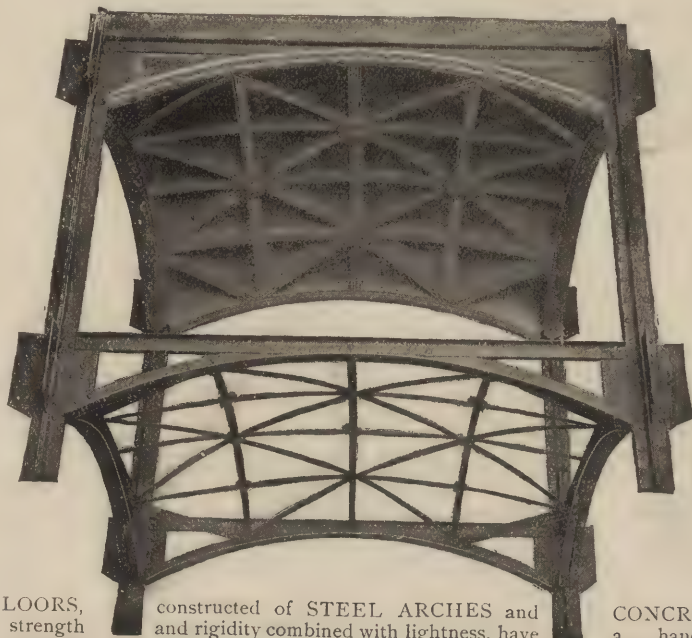
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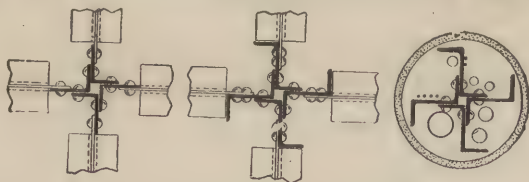
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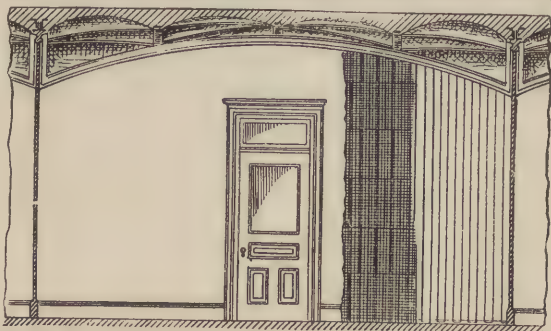
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The Architectural Record

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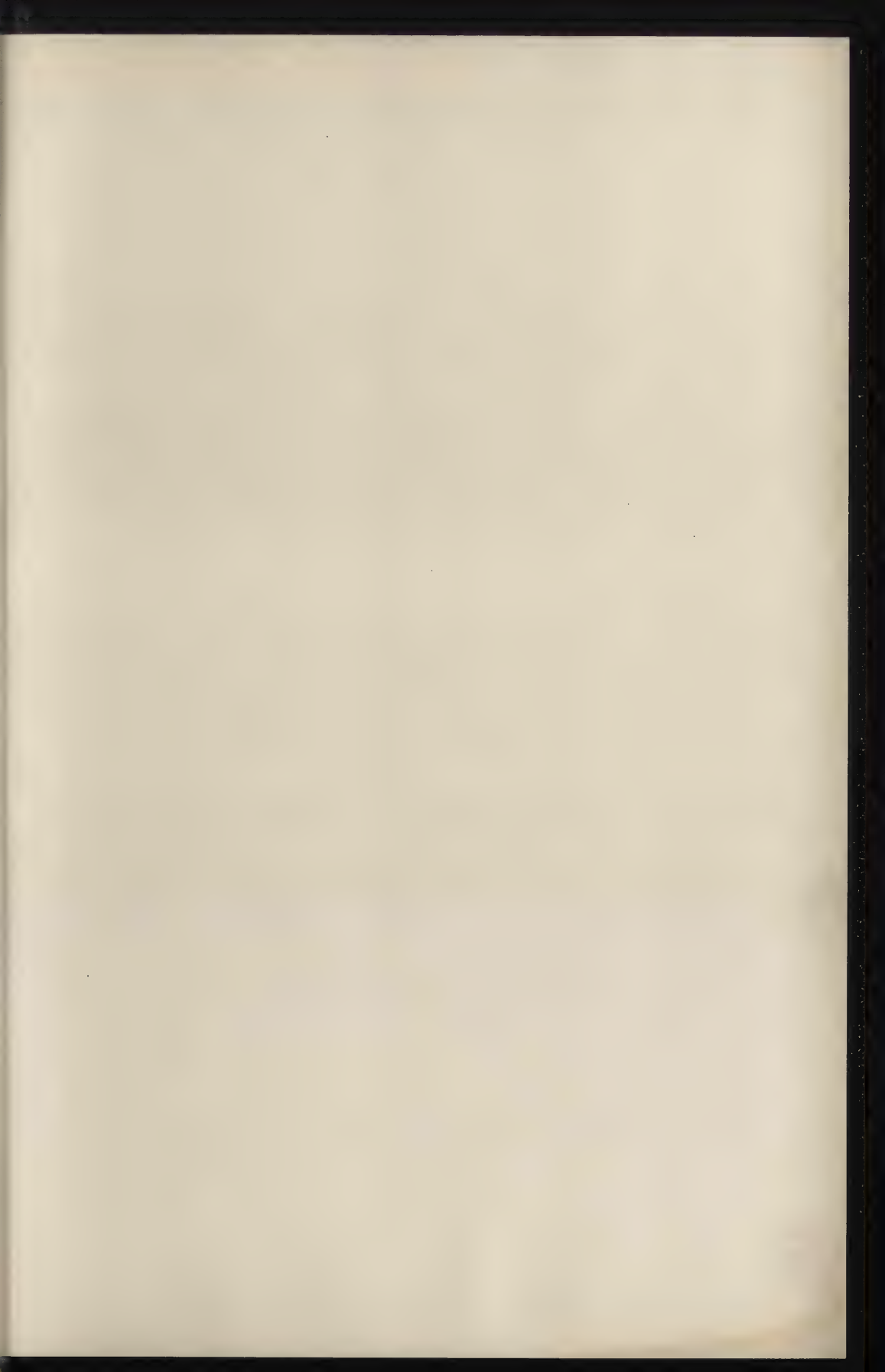
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THE ANCIENT THEATRE IN TAORMINO, SICILY.
From a fresco in the Burg Theatre, Vienna.

The
Architectural Record.

VOL. IV.

JANUARY-MARCH, 1895.

No. 3.

CHRISTIAN ALTARS AND THEIR ACCESSORIES.

Part I



It is evident, even to the superficial observer, that we are now, in this country, at the beginning of a church-building era—a state of affairs brought about through a growing love for the beautiful, the spread of ecclesiasticism and the constantly increasing wealth of the various religious organizations. Old-time prejudices are rapidly disappearing, the meeting-house idea is becoming obsolete, the edifices of the past are no longer good enough or churchly enough; hence there is a general call from all denominations, both in town and country, for new and better or more artistic buildings. In some cases this movement is inspired by doctrine and devotion, and in others it rises from mere emulation and fashion. American architects, with few exceptions, have not as yet shown themselves equal to the occasion; the opportunity to do good work has often been lost, not from their inability, but because they were not in touch with either the ecclesiastical or ecclesiological requirements. The young architect has the time to study the subject in all its many branches, to make himself familiar with the rules, both canonical and traditional, which govern the building, ornamentation and fur-

nishing of churches; but not so his older brother, already overwhelmed with a large and growing practice. Nevertheless, even he, if he aspires to do a good piece of ecclesiastical work, must absolutely take the time in which to acquire that necessary knowledge. No matter how great a genius he may be, he cannot afford to ignore the wonderful architectural monuments of the past, so full of artistic beauty and originality. Therefore this article on one branch of the subject, viz.: the history, construction and decoration of altars, has been written in the hope that it may prove useful—to one as an introduction to further study, to the other as a safe epitome of the essential facts.

It is not an original treatise, but only a careful and conscientious compilation from a large number of notes, which the author has gathered in the course of years from many writers and monuments as the exigencies of an active ecclesiological career called for the information therein contained. There will be no attempt to solve any archæological will-o'-the-wisp, to foster any peculiar religious views, or to advocate any particular ecclesiastical architectural theory, but simply to place before the reader those facts which will be of practical use to him should he be called upon to build an altar.

The English noun *Altar* is the equivalent of the Latin word *Altare*, which in its turn is derived from the adjective *Altus*—high.

Among the pagan Romans, an elevation of wood or stone, or even of earth, raised for the purpose of making thereon a sacrifice, or offering, was named *ara*; this substantive, however, was avoided by the Primitive Christians when speaking of or referring to their own altars, although Tertullian and one or two others use the phrase "*ara dei*," but as a rule it was not employed by the early writers—the word *altare* was the one used to designate a Christian altar. St. Cyprian, writing in the third century, draws a contrast in his 59th Epistle between the *domini altare* and the *diaboli ara*—a distinction in the use of the two words which is strictly adhered to in the Vulgate and all the Latin languages. There was also a similar usage among the Greek Christians.

The altar of the Jews was the object or place appointed to receive the offerings of sacrifice to Jehovah; they also used an altar as a memorial, such was the one spoken of in the seventeenth chapter of Exodus, and sometimes as a testimony: *Behold the pattern of the altar of the Lord, which our fathers made, not for burnt-offerings nor for sacrifices; but it is a witness between us and you* (Joshua xxii., 28).

A Christian altar is a table-like construction, used by the majority of Christians as the place upon which the Eucharistic sacrifice is offered, by others as a table from whence the Lord's Supper is administered, and when fully developed consists of a *mensa* or table, a *pradella* or platform, a *ciborium* or canopy, a *re-table* or step-like shelf, a *reredos* or screen, and, lastly, a *tabernacle* or closet for the Reservation.

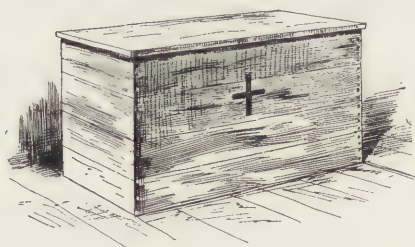
It is the principal object within the church, and is usually erected upon a platform in that part of the building reserved for the clergy, which is generally at the east end of the edifice, but, wherever placed, its position determines the orientation without regard to the points of the compass. It is placed in the east end of the church

for symbolic reasons. Under the old law the entrance to the temple was from the east to the west, which signifies that all before the passion of Christ tended toward the setting sun or death. But the entrance to a church is from the west to the east, which symbolizes our ascent from darkness to the throne of everlasting light and life, through faith in Jesus Christ, who was crucified with his face to the west, and will come on the last day from *the east, with great power and majesty*. It is raised upon a platform above the highest floor of the church, because it is the sacramental throne of Christ, and in order to remind the faithful of the Hill of Calvary.

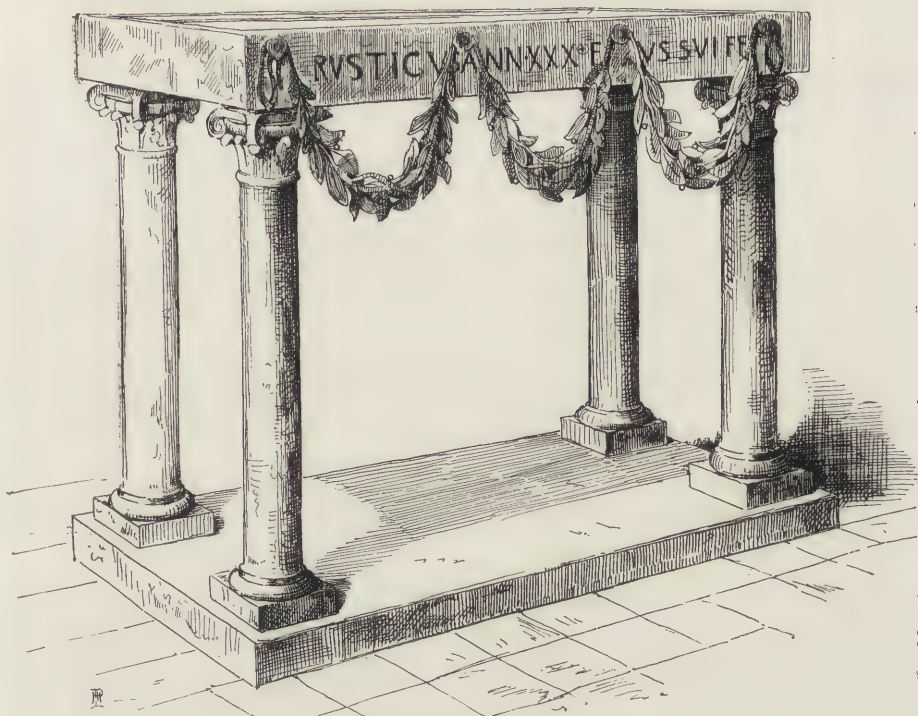
The altar is of more importance than the church itself, inasmuch as "the altar is not for the church, but the church is for the altar." It is the Calvary of the Eucharistic Sacrifice, hence the principal object in a church. The sacrifice can be celebrated anywhere—in a house or in the open air—but not without an altar of some kind; that is essential, even if it is only the hands of a cleric, as in the case of a fifth century bishop, Theodoretus of Cyrrhus, who offered the divine mysteries upon the hands of his deacons when he visited the Hermit Maris at Aparmaca in Syria, where there was neither a church nor an altar.

The first altar of which we have any account is that spoken of in the Book of Genesis in the following words: *Noah builded an altar unto the Lord and took of every clean beast and every clean fowl, and offered burnt-offerings on the altar*.

The first Christian altar was the table of the Last Supper in the guest chamber at Jerusalem, and the oldest



The oldest Christian altar in the world, made of cypress wood. Kept as a relic in St. John Lateran at Rome.

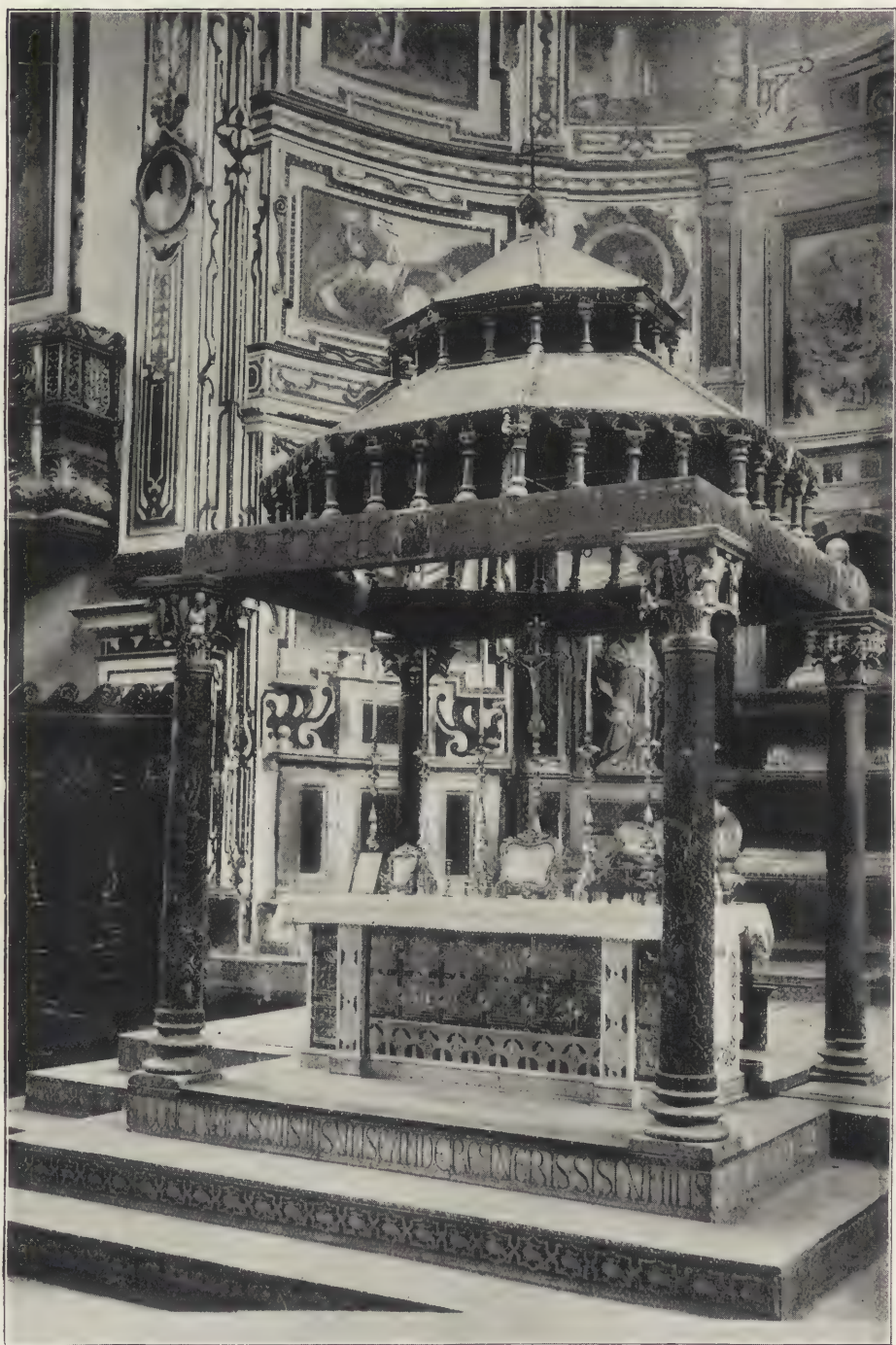


A FIFTH CENTURY ALTAR.

one now in existence is in the church of St. John Lateran at Rome. It is made of cypress wood in the form of a chest, the *mensa* overhanging the four sides. It is supposed to be the one upon which St. Peter celebrated the Holy Mysteries in the house of Pudenziana; at all events its authentic history ante-dates the age of Constantine, and to-day it is the only wooden altar allowed in the Roman Church, and is used exclusively by the Pope.

In the Primitive Church all altars, outside of the Catacombs, were probably made of wood, that is until the time of St. Evaristus, somewhere about the year 112, who is said to have condemned them; we know, however, from the days of St. Sylvester (314-335) their use was discouraged. The earliest canon on the subject is the 26th of the Provincial Council of Epaona, held in the year 517, which forbids the consecration of any but a stone altar; from thence on, wooden altars were disapproved of and stone ones took their place. Nevertheless they are allowed in exceptional cases, but where used, that

is in the West or Latin Church, the part of the *mensa* upon which the chalice and paten are placed is invariably made of stone. In some of the Oriental and Protestant churches they still adhere to wood. The reason of employing stone is a purely symbolic one, which is explained by Durandus, the greatest of mediæval symbolologists, in the following words: "*It ought to be stone, not because of the hardness, but the solidity of faith, for by this stone itself is understood Christ, of whom the Apostle saith, 'Jesus Christ Himself being the chief corner-stone.' By the stone indeed the humanity of Christ is denoted. Concerning which we read in Daniel, that a stone was cut out of the rock without hands—because Christ was born of the Blessed Virgin without human agency—becoming a huge mountain, filled the whole earth. Concerning which it is said also by the Psalmist, 'The stone which the builder has refused hath become the head-stone of the corner' since Christ—whom the builders, that is the Jews, refused, saying, 'We will not have this man to reign over us'—hath been made the head of the corner. Because, as saith the Apostle, 'God hath*



HIGH-ALTAR AND CIBORIUM IN THE CHURCH OF ST. NICHOLAS AT BERRI.



A TWELFTH CENTURY HIGH-ALTAR AND CIBORIUM, CHURCH OF ST. GEORGE, VELABRO.

exalted Him, and given Him,' etc. Or else by this stone, which ought to be great and wide, charity is understood, as was stated before; since the command of charity is wide, extending even unto our enemies; according to that precept of our Lord, 'Love your enemies.'"

All the first altars, whether made of wood, stone, marble or metal, were either in the form of a box, or consisted of a slab or *mensa* resting on one or more legs: generally one, three, four

covered with beautiful stuffs, ornamented with silk embroideries studded with gems or enriched with plates of gold and silver.

In the beginning there was but one altar in a church, after awhile others were introduced, but the principal or high-altar was always built in the chancel, the others were placed here and there and were only shrines, often varied in form from the high-altar, which was usually a parallelogram.



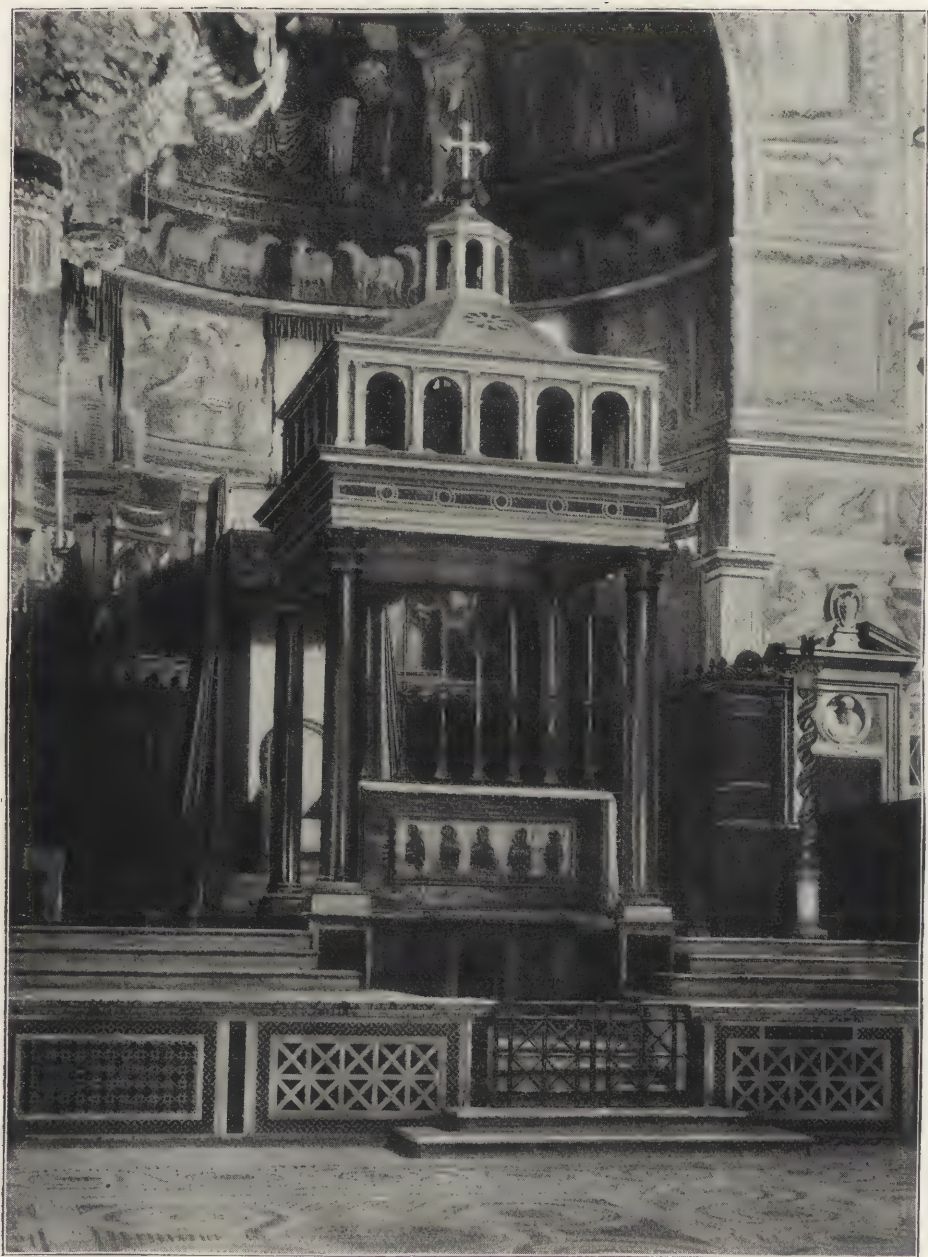
A SIXTH CENTURY ALTAR (FRENCH).

and sometimes five in number. Often the *mensa* was held up by a slab (*stipes*) at each end or by a bracket from the wall of the building. There is no doubt these altars of the Primitive Church were very simple and plain; but no matter how common or precious the material of which they were made might have been, if we are to believe the descriptions, pictures, mosaics and other monuments which have come down to us from the earliest ages, they, when in use, were

After the church emerged from the Roman persecutions, and the Christians were granted by the edict of Milan in 313 the free exercise of their religion, their stone altars consisted of a consecrated slab or *mensa* resting upon four pillars, typical of the four Evangelists; they were always either open or hollow, detached from the wall and stood upon a platform beneath a canopy. As a rule, they were built over a crypt or tomb-like shrine containing the body of a saint or martyr, with apertures



HIGH-ALTAR AND CIBORIUM IN THE CHURCH OF ST. JOHN LATERAN



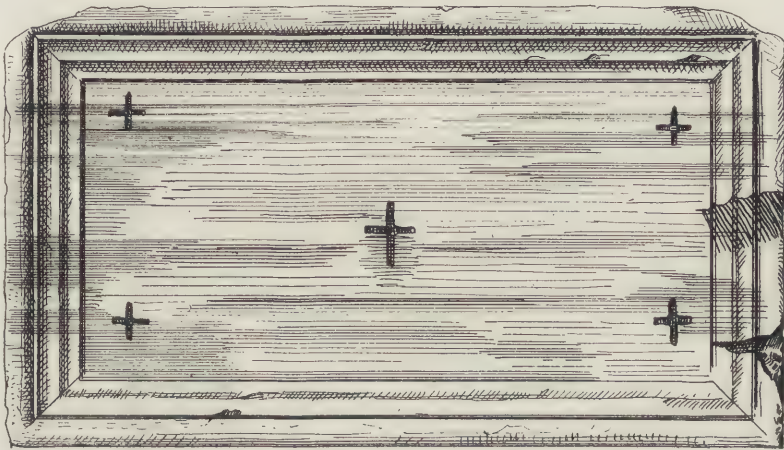
HIGH-ALTAR OF S. MARIA IN TRASTEVERE AT ROME.

into the crypt through which the relics could be seen and even touched. This usage and disposition of relics remained in force until the fifth and so on to the tenth century, when it became necessary from time to time to remove them from place to place, on account of the invasions of the barbarians, which became so frequent in some countries that they were placed in portable shrines. From this custom originated the relic-altars of the middle ages.

As there are a variety of altars, they are distinguished one from another by specific names, as high-altar, side-altar,

It was the all-important part of the altar, as we learn from the writings of the first Christians. Gregory Nyssen, a bishop of the fourth century, says, "this holy altar at which we stand is a common stone by nature, differing in no respect from any other slab of stone with which our walls and pavements are adorned; but since it is dedicated and consecrated to the worship of God and hath received a benediction, it is a holy table, an immaculate altar, which no longer is to be touched by all, but by the priest."

To protect the relics or reliquaries beneath their altars the early Christians



THE UPPER SURFACE OF A SIXTH CENTURY MENSA.

shrine-altar, relic-altar and portable-altar. A high-altar is the chief one, and in the Primitive Church stood alone in the centre of the sanctuary, between the throne of the bishop and the outer or west edge of the chancel platform. In the early days of the Faith it was without either *re-table* or *reredos*; moreover nothing was allowed upon the *mensa* besides the altar cloths, the sacred vessels, the service book and the diptychs containing the names of all those persons, both the living and the dead, who were to be remembered at the celebration. The *mensa* was a slab of natural stone, slightly hollowed out on top, sometimes with an orifice for the escape of the water when the slab was washed.

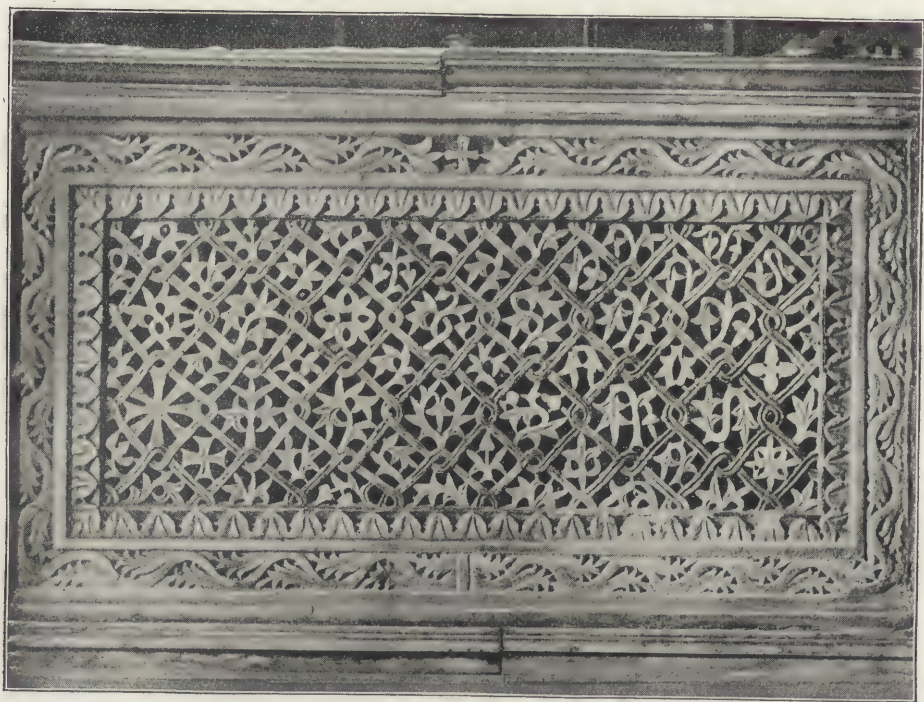
filled in the open spaces between the bottom of the *mensa* and the floor with perforated slabs of marble, stone and wood, metal grills or simply with curtains of silk. The use of curtains was by no means confined to the altar itself; they were also hung from rods running from spring to spring in the arches of the *ciborium*, at least on one or three sides. The arrangement of a primitive chancel and altar can be seen to-day in many churches in Italy, more particularly in the Roman churches of St. John in Laterano, St. Clement, St. Lawrence, and in the Ambrosian basilica at Milan. In the last-named church true orientation has been kept; the building stands due east and west, with an isolated altar



A HIGH-ALTAR (SIXTEENTH CENTURY) IN ST. AGNES, ROME.



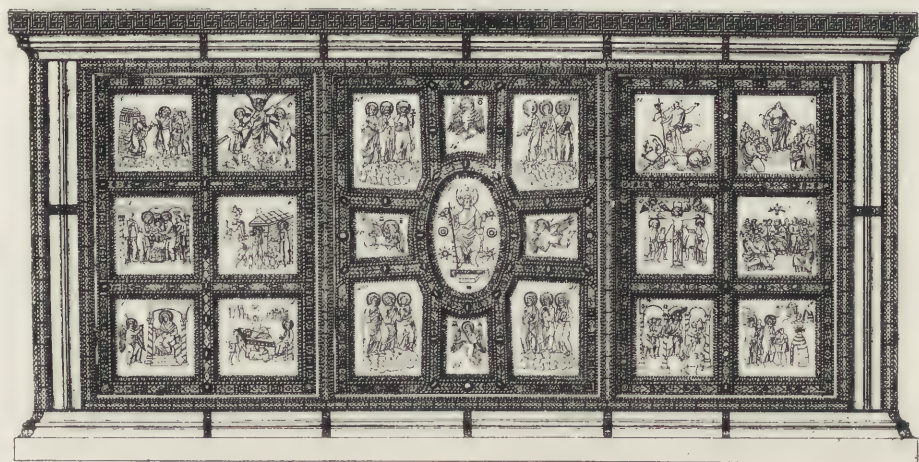
A HIGH-ALTAR OF THE SEVENTEENTH CENTURY—S. PRASSEDE, ROME.



PERFORATED MARBLE SLAB FROM AN ALTAR AT RAVENNA.

in the east end, beneath a dome-shaped *ciborium* upheld by four columns of porphyry, and behind it, against the east wall of the sanctuary, stands the Episcopal chair. This is the church in which Saint Ambrose in the year 386 deposited under the high-altar the remains of the martyrs Gervasius and Protasius and concerning which he wrote a long letter to his sister. The following passage is taken from this letter, as it illustrates the usage of the Christians in always associating with their altars the relics of martyrs and saints. He writes: "Bring these victorious victims to the spot where Christ is the sacrifice. But He, who suffered for all, upon the altar, they who have been redeemed by His passion, under the altar—wherefore let us bury the hallowed relics, placing them in a worthy home." This custom was not always followed, that is, after the ninth century; subsequently to this date the relics were sometimes placed above the altar, but never above the high-altar.

The altar of the days of St. Ambrose was replaced in the year 835 by a magnificent work of art which is still the principal altar of the basilica. It was erected by Archbishop Angilbert and is an oblong cube, made of silver parcel-gilt and pure gold, enriched by repoussé work, colored enamels and inlays of precious stones (*encabochon*); the sides and back are of silver, the frontal of gold, which is divided into three compartments, the middle one contains a cross having in its centre a seated figure of the Redeemer, while in the arms of the Cross there are representations of the four Evangelists under their symbolic forms, and between the arms the Apostles are arranged in groups of three; the remaining compartments are filled with eventful incidents in the life of Christ. The back of the altar is similar to the front, as far as its divisions are concerned, the central one is occupied by two doors leading to the relics; upon these doors are four circular medallions filled with figures of the arch-



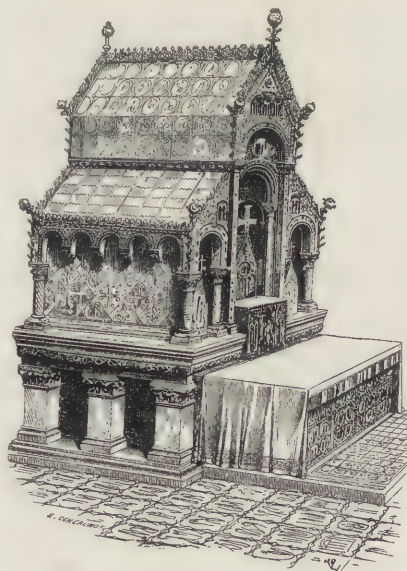
Front of the high altar of the ninth century in the Basilica of St. Ambrose at Milan.

angels Michael and Gabriel, St. Ambrose receiving the altar from Archbishop Angilbert, and St. Ambrose blessing the silversmith Wolvinus, the designer and maker of this wonderful altar; in the other compartments are portrayed the principal events in the life of St. Ambrose; on the sides of the altar there is the same kind of work; in the left one there are eight angels bearing vials, and four medallion portraits: Ambrose, Simplicianus, Ger-

vasius and Protasius; on the other side there are the archangels Michael, Gabriel, Raphael and Uriel, together with four saints: Martin, Maternus, Nabor and Nazarius.

This most beautiful and remarkable altar is one of the best examples of the basilican type in existence: a simple table without re-table or reredos, accessories that would be in the way and hide the priest from the people, as he celebrates with his back to the apsidal or east end of the presbytery and his face toward the people, with the altar between him and them.

Just the date of the introduction of side-altars into churches cannot be



The relic-altar of S. Denis. A restoration by Viollet-le-Duc.



The side-altar of S. Felice (16th century), Church of S. Anthony at Padua.



Mediæval altar, with hanging. After Viollet-le-Duc.

fixed with any great accuracy, however it is known that they came in use at a very early period and that after the sixth century a plurality of altars was the rule in the churches of Western Christendom.

St. Gregory of Tours (A. D. 573), tells us that he said mass at three different altars in the church at Braisne, near Loissons, in France; Palladius, bishop of Saintonge, wrote Gregory the Great, Pope from 590-604, for relics to place in the altars of his church, thirteen in number; and Alcum (735-804) in a Latin poem, says that there were thirty altars in the cathedral church of

York; from this time on, the evidence as to multiplication of altars in all churches is overwhelming, both from documents and monuments. Side-altars were built in honor of some particular saint or the titular of the church or for the reception of the relics of many saints. Very often a figure of the saint was placed above his altar or his relics in a reliquary of one form or another.

An altar containing a number of relics was generally more beautiful than other side-altars, often rich in gems and precious metals; such a one was erected by the great Abbott Suger in the twelfth century in the church of Saint Denis: it was built of porphyry enriched with agates and in places overlaid with gold and incrustations of precious stones, here and there inscriptions made with letters in enamel; the bodies and relics were placed back of and under the altar in a chest cut from a block of black marble, and resting on this were eight square pillars of the same material, which upheld another block of black marble embellished with mouldings; between the pillars there were eight wrought iron grills covered with gold, gilt foliage and round bits of enamel on copper. Inside the pillars and grill-work, over the sepulchre, there was a cover of stone and copper, and above the upper block of marble, of the same length and width, there was a tabernacle in the form of a church with a nave and two aisles, richly embellished with carvings and enamels, in the nave and aisles were beautiful



A silk embroidered antependium of the 18th century. Italian.



A THIRTEENTH CENTURY ALTAR IN THE LOWER CHURCH OF S. FRANCIS AT ASSISI.
Designed by Jacopo d'Alemania.



SIDE-ALTAR OF THE HOLY CROSS IN S. MARK'S, VENICE.



A part of an ivory and wood antependium in the Cathedral at Salerno.

reliquaries of wood in the form of a sarcophagus, these were made precious with metals and embellished with agates, Oriental pearls, aqua marina, topazes, garnets, sapphires and many other gems. On the peak of the larger reliquary there was a cross of gold and on the others crosses of silver, all three set with amethysts, garnets and emeralds. Upon this master work of art was written in golden letters the following legend: *Facit utrumque latus, frontem, lectrumque Sugerus*.

During the first ages of the Faith, down through mediæval times, it was customary to partially surround the altar with veils, a practice already alluded to; these curtains were changed with the vestments of the feast, so as to agree in color with them. In addition to these, hangings: superpendiums and antependiums, were sometimes employed as veils or half veils for the front of the altar below the *mensa*; these frontals, however, were not always made of cloth, often they were constructed of metal, wood or ivory.

It will be seen from the above that the distinguishing marks between high-altars and side-altars of the past were in the position they respectively occupied in the church building, in the elevation of the high-altar over all others, in its simplicity both in form and decoration, and in the richness of ornamentation in side-altars of all kinds, more especially relic-altars. Then again nothing could be placed above a high-altar except the Eucharistic reservation, which was at times suspended in a pyx hanging by a chain from the underside of the *ciborium* or from a bracket attached to the back of the altar.

The next form of altar to be considered is that known in the early church as *altaria portatilia* or a portable altar. This kind of altar consisted of a small portable slab of wood or stone, consecrated and generally containing relics; they were used by missionaries, bishops and priests when on a journey, or by armies when in a camp distant from a church or while on

the march. The Venerable Bebe tells us that when the two Hewalds preached the Faith of Christ to the Saxons in 690 they daily offered up the "*sacrifice of the saving oblation—for they had with them sacred vessels and a consecrated slab for an altar.*" So common had they become in the days of St. Anselm, 1106, and so often abused, that he thought it his duty to protest against consecrating them: "I do not condemn the usage," he writes, "but I prefer that unattached altars should not be consecrated." Nevertheless down to a very late date grants of portable altars were frequent, Julius II., in the sixteenth century, granted to the Guild of St. Botolph at Boston, in England, the right to use one; to-day, however, their use is almost entirely confined to Roman Catholic missionaries in heathen lands or in a sparsely-settled country. Many of the portable altars of the middle ages were objects of great beauty and artistic value; they were made of jet, jasper and marble encased in rich frames of gold or silver carving, mosaics and gems. As this kind of altar is foreign to our subject it will not be referred to again in this or subsequent articles.

Next to the altar in importance, its earliest accessory, is the *ciborium*, otherwise a canopy. It is sometimes incorrectly called a baldachin, an English corruption of the Italian word *baldacchino*: a canopy made of a textile fabric, and held over a priest when carrying the Sacrament in procession or taking it to the sick, or placed above the chair of an illustrious person on state occasions and also over the throne of royal personages.

The word *ciborium* is derived from the Greek *Κιβώριον*, the primary meaning of which is a cup in the form of the seed-vessel of the Egyptian lotus, hence its application to an altar-canopy which in form resembles an inverted cup. The *ciborium* came into use just as soon as the Christians began to build churches having any architectural value, and was not only placed above high-altars but also often over side-altars, when they came into vogue. These canopies were supported

by columns and were constructed of wood or wood covered with metal, of metal alone, marble, alabaster and many other substances.

The *ciborium* of the church of Santa Sophia at Constantinople, erected by Justinian from the design of the architect Anthemius in the year 534, was an octagonal pyramidal dome crowned with a cross and resting upon four columns of silver, the whole enriched with mosaics and ornaments, hangings and veils of silk in which were woven figures of Christ, St. Peter, St. Paul and other saints.

Often lamps were suspended either from brackets at the corners of the *ciborium* or from the soffit of its arches, while from the centre of the under side of the dome or ceiling hung a chain to which a pyx was attached.

The most celebrated *ciborium* of modern days is that over the high-altar of St. Peters at Rome, which is 95 feet high, and was built by Urban VIII. from the design of Bernini in 1633. It is of bronze supported upon four spiral columns with composite capitals and gilt ornaments, and is said to have cost \$225,000.

In the basilica of St. Paul *Fuori le Mura* at Rome there is a double *ciborium*; one over the other, the under one is Gothic in style resting upon four columns of red porphyry, while the upper canopy is in harmony with the lines of the church and is supported by four columns of Oriental alabaster, presented to Gregory XVI. by Mahomet Ali.

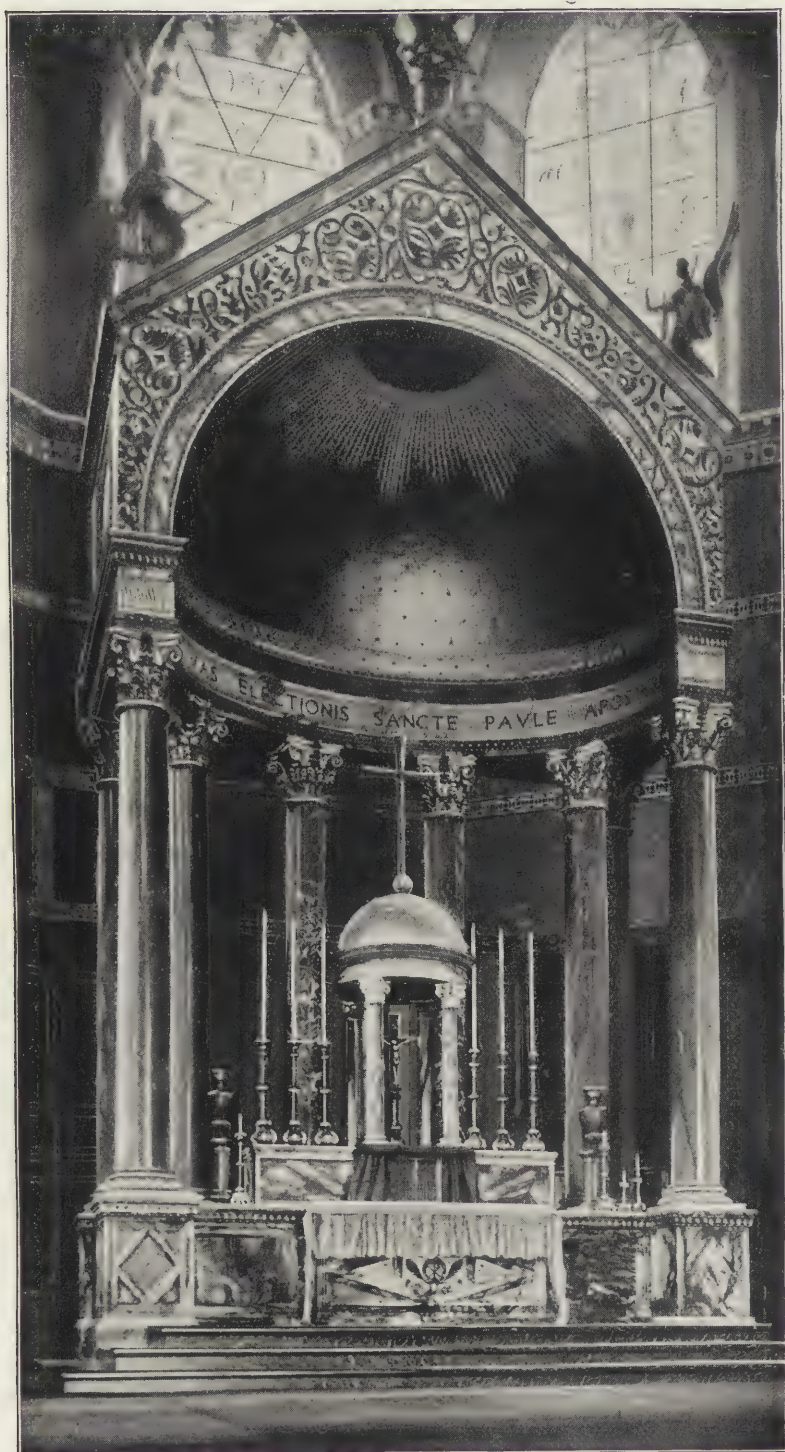
Ciboria in the form of a semi-dome are not uncommon, although not of an early date; one of the best examples of this kind is in the church of St. Paul the Apostle, in New York; it is composed of alabaster with gold-mosaic and stands upon monoliths of most beautiful African marble of various colors.

In Italy, wherever the high-altar of a church is without a *ciborium*, it is the custom on great festivals to suspend over the same a square or elliptical canopy of silk damask, which the Italians rightly call a *baldacchino*.

The next accessory of an altar to be considered is the *re-table*, which is a



HIGH-ALTAR OF ST. PAUL'S, ROME.



H. W. BELKNAP.

HIGH-ALTAR IN THE CHURCH OF ST. PAUL THE APOSTLE.

New York City.

Designed by Stanford White.

sort of shelf, step or steps at the back of the *mensa* and raised above it. The crucifix or altar-cross, candlesticks, reliquaries and flower vases are placed upon this member. Its origin is unknown, as well as just the time it was first employed, yet there is one thing we can say with the full assurance, and the statement cannot be refuted, viz.: that it is not found in conjunction with the early altars, although a most useful accessory and almost invariably forming a part of all altars built since the fifteenth century. The word *retable* is taken from the French, but in France it is equivalent to our word *reredos*.

Modern altars in a general way resemble those of past ages, nevertheless there is enough difference to mark them as belonging to our time. To draw out in full these differences would serve no practical end, yet, in view of what has already been said, and from the following rules governing the construction, form, size and decoration of the altar of to-day the whole matter will be very plain to all attentive readers.

In order to have a fixed standard, as a guide in every thing concerning altars, it is well to take the rulings of the Congregation of Rites as the criterion, if for no other reason that its laws and judgments are based on known precedents, canons, constant and well-founded traditions, and are generally conservative. Besides, its decisions are accepted as absolute by the largest body of Christians employing altars in their divine service.

I. A modern high-altar may be placed in one of two positions: either well out toward the front of the sanctuary, as practiced in the early church, or close to the east wall of the chancel, but never attached to it, at least two feet and a half away, as this space or passage is needed, not only at the time of consecration, but at all times for the convenience of the sacristan and those carrying on the services.

II. A high-altar must stand upon a platform with a *predella* or foot-pace approached by not less than two steps, thus with the *predella* raising it three

steps above the floor of the sanctuary. If there is a desire to raise it higher, there is no reason against it, only the steps, including the *predella* in any case, should be kept unequal in number and never more than nine. There is a symbolism in odd numbers, a teaching thought, that it behooves the architect to adhere to, as it appeals to devout minds and is traditionally sound. Three stands for the foundation of all truth: the Father, the Son, and the Holy Ghost; five for the holy wounds of the crucified; seven for the virtues of humility, liberality, chastity, meekness, temperance, brotherly love and diligence—the steps that all Christians must tread if they hope to place the seven deadly sins beneath their feet on the road to the Heavenly Altar of everlasting life; and nine represents the three angelic hierarchies of three choirs each, or the nine orders of angels who are always singing there divine canticles before the throne of God.

III. The *predella* should not project less than four feet and a-half in front of the altar and at least fourteen inches at the sides. Its length should correspond with that of the *mensa* plus fourteen inches at either side. A good width for the treads of the steps is from twelve inches to two feet, and the height for the risers four and a-half inches; it has been found by experience that low and wide steps offer less chance of accident by a misstep to those engaged in the ceremonies appertaining to the altar, than any other form. If the *predella* and its approaches are of stone some provision must be made for holding the carpet in place, with which the ceremonial prescribes they should be covered on all solemn occasions or grand functions. In this country it is better to make the *predella* and steps of wood on account of the extreme cold of winter. The steps on the sides of the *predella* ought to be as wide as those in front, and the lowest one of these six feet back of the communion rail or more if there is room.

IV. The *mensa* of a high-altar should be rectangular in form, a single, natural stone, not less than nine feet long

and two feet wide, square at the edge, without sculpture which is liable to catch the vestments of the celebrant. Where the altar is very long the top may be made of three slabs, but the centre is alone the *mensa*. A good general height is three feet five inches above the *predella*; when it is over this, or more than two feet six inches wide, it will be found inconvenient for the average-sized man, especially if there is a tabernacle above it. It can be supported upon stone piers, columns, a solid or hollow foundation, but not upon brackets, bricks or artificial stone; the support can be covered or filled in with wood, stone, marble, mosaic and metal, and ornamented in any way that is dignified and consistent with its use and the style of architecture of the church in which it is built.

The *mensa* should invariably extend beyond its base or support, both at the front and sides, in order to give the priest, while celebrating, room to genuflect without striking his knees against the altar-frontal. On its upper surface five crosses must be cut, one at each horn or corner and one in the centre of the slab; and among some nations the date of consecration, together with the name of the consecrator, are inscribed on the under side.

V. If small relics are used, there must never be less than two. They, with three grains of incense, are put in a leaden box, either square or round, closed with a cover, tied down with a red ribbon crossed and sealed with the signet of the consecrating bishop, and placed in a square cavity called a *sepulchre*, three inches by three inches, hollowed out of the centre of the *mensa* of sufficient depth to receive the box and allow room for a cover of stone, which, when in place, must be flush with the upper face of the slab and fastened with cement. If the relic is the body of a saint it is placed under the *mensa* within the altar.

VI. If the *mensa* is made of any other material than stone or marble, as in the case of wooden altars, there must be a *super-altar* or altar stone, of marble, jasper, alabaster, etc. This stone must be inlaid in the body of the

mensa, midway between the Gospel and Epistle end, and at an equal distance from the back and front edge—that part of the altar on which the chalice and paten rest. Moreover, it must bear five incised crosses and have a receptacle for relics. In truth, the *super-altar* is the *mensa*, hence it is made of stone, as stone alone can be consecrated, and as it “signifies Christ the Stone growing into a mountain; as it is said, the mountain itself is fat, *being anointed with the oil of gladness, above his fellows. Jacob set up the stone for a memorial, and poured oil upon it.*”

VII. High-altars of the great basilicas, as described above, were without *re-tables*, because they would have prevented the people from seeing the officiating priest, who stood, as was said before, with the altar between him and them; but where the altar is turned about, so that the priest has his back toward the nave, it is customarily furnished with a *re-table* of two, three or more steps or shelves, running the full length of the *mensa* or beyond it, all of one length, or breaking away at the sides or cut in two in the middle by a tabernacle, where there is one, which is the case in the high-altar of most all parish churches.

VIII. The *re-table* is either as long or longer than the *mensa*, and is built up at its back or east edge, but in no case must it encroach upon the same. It is sometimes made of wood or of the same material as the altar; the gradines vary in height and depth; the first from the altar should not be as deep as the next ones, six inches is a fair height by eight inches deep for the first, twelve for the next and fifteen for the third. This is a matter very largely determined by proportion and good taste.

IX. High-altars in some monastic churches (mendicant friars) are joined to the side walls of the chancel by paneled and ornamented partitions, with a door on the right and left leading to the choir, which is east of the altar. There is sometimes a square opening in the *re-table* so that the celebrant can be seen by the religious.



SIDE-ALTAR IN ST. MARK'S, VENICE (SIXTEENTH CENTURY).



A SIDE-ALTAR OF THE SEVENTEENTH CENTURY—S. TRINITE, FIRENZE.

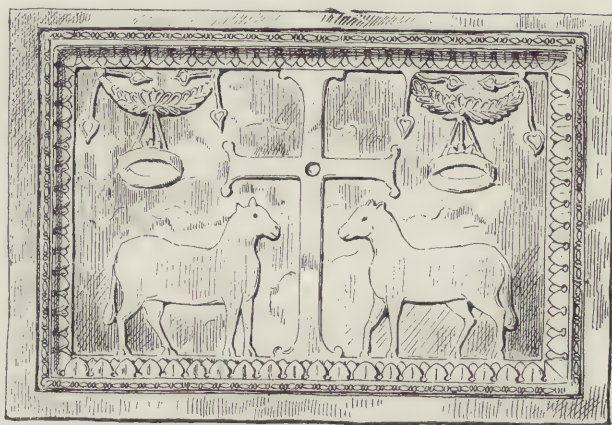
X. Side-altars are ruled by the same general canons as high-altars. They are smaller, stand upon a *predella* without steps, and with one gradine on the *re-table*; they should never have a *tabernacle*, unless the altar is used as an altar-of-the-Blessed Sacrament. If they are altars of sacrifice the *mensa* is the same as that of a high-altar. Side-altars may have a figure of its titular on the *re-table* or picture in a *reredos*. When there are a number of *side-altars*, the first in dignity is the one nearest the Gospel side

of the high-altar and the next is on the Epistle side.

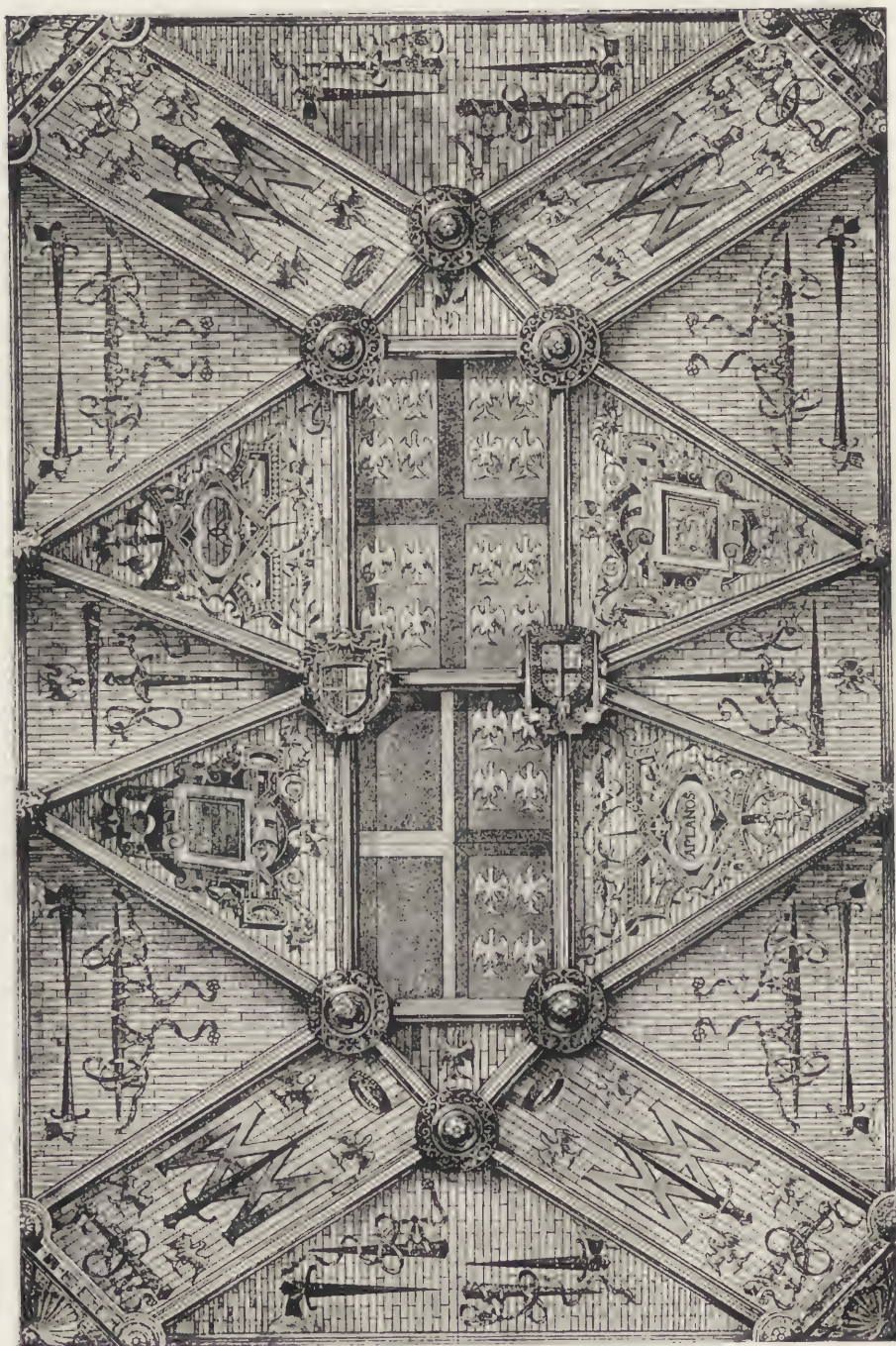
XI. An altar cannot be built over a mortuary vault; this prohibition extends even to the *predella* and steps; nor can there be a cupboard for cruets, etc., of any kind in the altar, *re-table* or *reredos*.

The next division of the subject of this paper, viz.: the *reredos* and *tabernacle*, will be treated at length in the second part of this article—in a future issue of the ARCHITECTURAL RECORD.

Caryl Coleman.



Front of a fifth century altar in the tomb of Galla-Placidia at Ravenna.



VAULT IN CHAPEL OF CHATEAU D'ECOUEN.



MODERN MOSAICS.

THE MOSAICS OF NICCOLO BARABINO IN THE FAÇADE OF THE CATHEDRAL AT FLORENCE.



NICCOLO BARABINO, whose sudden death in 1891 was such a loss to Italian art, was pre-eminent both as a dramatic and decorative painter.

Born at Sampierdarena, near Genova, in 1832, he entered the Accademia of the Belle Arti in that city at the age of twelve, and closed a brilliant career there by carrying off the Durazzo scholarship. Finding that his friend Semino had been classed second in the list of competitors, he insisted that the scholarship should be divided between them, and the two set off to study together in Florence. The generous disposition here displayed accompanied him through life and won him the warmest regard from his fellow artists.

Barabino's first pictures were commissions for religious subjects, especially for Madonnas; and in these his tendency to decorative effects makes itself at once felt. He loves to paint the Virgin Mother with her Babe in panel form, with straight lines behind, either of the niche in which she sits or of the rug hung on the wall. The folds of the robe are more or less decorative, as are the lines of the marble bench with raised steps, on which she sits. Take for instance the two Madonnas

seated among olive branches; the *Madonna dell' Olivo* and that called *Quasi oliva speciosa in campis*. The latter was purchased by the Queen of Italy, who carries it about with her in all her journeyings, and always places it near the head of her bed. In these the decorative intention is plainly visible, both in the attitude of the Madonna, in the way in which she holds the Child, in the upright lines behind, in the raised steps on which her feet rest, and in the slightly conventional treatment of the olive branches that surround her. All the details in fact go to emphasize the constructional decorative line of composition, and thus to give character and force to the composition itself.

This same treatment of steps, pilasters, constructive marble work and niche opening in the central part of the composition, form the main lines on which Barabino designed the three mosaics over the doors in the façade of the Cathedral of Florence. He has thus obtained a most effective variant on the ordinary mosaic backgrounds of blue or gold. He has secured a concentration of effect rare if not unknown in mosaics, and he has brought the three tympani into such harmony with the rest of the façade (in which, it will be remembered, statues seated or standing in niches are largely used) that their design seems

to have sprung complete from the mind of the master who gave birth to the plan of the whole.

When Emilio de Fabris found that his design for the façade had been chosen from among all those presented to the Committee of Judgment, he ap-

Maria del Fiore, is dedicated) and then of the Son, in whom the Universal Church rests. The embodiment of this idea is clearly visible in the sculptures with which the façade is loaded; and Barabino has conceived his mosaics in the same spirit.



By Prof. Barabino

JESUS ENTHRONED.

Mosaics in the central door of the façade of S. Maria del Fiore.

pealed to Professor Augusto Conti, well known as a writer on art and philosophy, to furnish him with the details of ornamentations which should harmonize with his architectural scheme. Prof. Conti decided that the whole decorative scheme should be in honor first of the Virgin (to whom the Cathedral, Santa

At the time when this work was confided to him, Barabino was President of the Artists' Club in Florence, and all men hailed in him one of the greatest, perhaps the greatest living Italian painter. Moreover he was especially fitted for work of a decorative character, as he has executed, especially in



By Prof. Barabino.

FAITH.

Mosaic over left-hand door of S. Maria del Fiore.

Liguria, a great number of very fine frescoes; thus acquiring that boldness of design and line which are essential to an art dependent on architecture.

The composition of the three lunettes focuses, so to speak, Prof. Conti's intention in the decoration of the whole façade. That over the central door, below the shrine of the Madonna and Child, and Passaglia's bas-relief of the Madonna surrounded by Seraphim, represents Christ, enthroned in the act of blessing the Virgin bent before him and imploring grace. Above run the words, *Mater divinæ gratiæ*. On each side are grouped the Saints invoked as protectors of the city. In this, as in the other mosaics, the composition and treatment are clearly given by the accompanying engravings which the kind courtesy of Prof. del Moro, De-Fabris' successor as architect, enables us to

publish. Of the richness and depth of the coloring, however, which gives exactly the note of warmth needed by the coldness of the marbles above and around, engravings can of course give no idea. The two side lunettes are to the honor of the Madonna, protectress of the city and inspirer of charitable institutions. That over the left-hand door, the one nearest Giotto's bell-tower, is the image of Faith, with representatives of the various arts that made the city famous grouped around the throne, and above her head the legend, *Auxilium Christianorum*. Over the right-hand door is Charity throned, above the founders of the various charitable institutions of Florence, and above her runs the motto, *Consolatrix Afflictorum*. Both Faith and Charity are, however, not the purely ideal figures generally used, but the type which



By Prof. Barabino.

CHARITY.

Mosaic over right-hand door of S. Maria del Fiore.

Barabino always adopts for his Madonnas. He has given us the Madonna as Faith, the Madonna as Charity.

Passing now to the composition and coloring of the central mosaic, we are at once struck by the admirable effect of light and shade obtained by the curvatures of the niche in which the central figure sits, and the highly decorative effects of the lines of simulated marble-work forming the pilasters on each side of the niche. The figure of Christ, slightly sculptural, is redeemed from conventionality by the extreme freedom of motion of the arm thrown up in the act not only of blessing, but also of calling attention to the kneeling Virgin *mater divinæ gratiæ* and by the pose of the head which is more erect than is at all usual in figures of the Christ, being even slightly thrown back and giving the expression not so

much of meekness (that is left to the Virgin) as of active regal life. It will in fact be remembered that Christ was saluted as King of the Florentines, and that an inscription to this effect still exists on the door of the Palazzo Vecchio. Noticeable, too, is the peculiar cross draping of the cloak, to be observed also in the figure of Faith over the left door, and in the *Madonna of the Olive*. The saints around are those especially dear to the Florentine mind; St. John the Baptist, whose Church opposite the Cathedral is every year the scene of the most solemn rejoicings; Sant' Anna, protectress of the liberty of the city, on whose feast day the Tyrant Duke of Athens was driven out; San Lorenzo, whose vast dome-crowned Church rises but a short distance from the Cathedral; S. Giuliana Falconieri and Santa Maria Maddalena dei Pazzi,

peacemakers between the factions of warring Florence; and San Vittorio honored for the victory of the Florentines over the Pisans.

The coloring of this central mosaic is gorgeous and harmonious. The reds predominate—crimson in the cloak of San Lorenzo on the right, violet-purple in that of San Vittorio, light porphyry-purple in the vest of the Christ, and the note is given again at the foot of the throne by red-edged books. These various tints are dominated and harmonized by the intense deep red of the niche, still further toned by its black arabesques and the deep shadow in which the left-hand portion of it lies. The note of blue is given by the world which the Christ holds in his left hand and by the Madonna's cloak. The former is light blue, as of the sky, the latter an intense dark blue. The requisite lighter tints are given by the Christ's white outer robe and the head-dresses of the nuns, while the black cloaks of these latter and St. John's sunburnt figure introduce the sombre tone necessary to set off the brighter colors. Add now the glittering haloes, the golden vase with its white lilies and their yellow stamens, the golden arabesques of the Christ's robe and the golden points in the lines of marble-work that frame the niche, and you have a whole of marvelous richness and harmony of coloring.

In the two side lunettes the gold falls into the background. They form, as it were, a rich but sober setting to the bright gem in the centre. The figure of Faith in the left-hand lunette is wrapped in a cloak of the blue usually assigned to the Madonna, arranged in Barabino's favorite cross draperies, and she holds a red book. She thus stands out from and relieves the group around the steps of the throne, in which dull yellows and browns predominate, deepening into yellowish green in the tunic of the workman who displays the fleece

at the left of the picture. The silken tissue displayed on the right is dull yellow. Very noticeable here as elsewhere in Barabino's mosaics are the intensely Florentine and characteristic faces. They are sharp and shrewd, each with its own individuality impressed on it. Look, for instance, at the notary craning forward at the Madonna's right hand, or at the upright figure at her left in the corresponding mosaic over the right-hand door.

The two points of light in the right-hand mosaic are given by the scarlet robe of the left-hand figure just mentioned and the rose-hued gown of the Madonna. The drapery of the other figures is black, or practically so, the requisite light being obtained by the marble and small points of gold which form the background. The personages in this mosaic are founders of the hospitals, foundling hospitals and other beneficent institutions, whose heraldic devices ornament the steps of the throne on which the figure of Charity is placed.

Regarding these three mosaics as an organic whole, we must give them high praise as fulfilling, under considerable difficulties, the true scope of the mosaic art. They are thoroughly in harmony with the rest of the façade; they are eminently decorative in their conception and execution; the heads are individual and interesting; and they are of a coloring rich enough to give warmth to the whole weight of marbles above and around them. The execution is perhaps in places flat, notably in the black robe of the principal personage on the left of the figure of Faith; and some of the details—the space being so extremely limited—cannot be appreciated from below. But we may nevertheless feel sure that the mosaics of Barabino in the façade of the Cathedral of Florence will remain an example of that revival of the art which marks the end of the nineteenth century.

Isabella De Barbieri.



STUDY IN CHATEAU DE CHANTILLY.



THE MUSICAL IDEALS OF ARCHITECTURE.

Part I.

THE UNITY OF THE HARMONIC LAWS IN THE ARTS OF MUSIC AND DESIGN.



UCH as the several branches of the Fine Arts have been discussed, and their origins, influences and laws of right and wrong individually analyzed, there are yet certain aspects of the unity in origin and purpose of the various members that have never received the attention they would seem to deserve.

Among these relations is that between Music and Architecture, including under the latter the minor arts allied to her and dependent to any degree upon abstract design.

To be sure, ever since Pythagoras, who probably derived much of his knowledge from the ancient lore of the Egyptians, propounded his theory of the harmony of numbers as being the foundation of all natural phenomena, and Plato raised the minds of men to the contemplation of an ideal beauty in which the accidental and the imitation of externals had no part, many

writers on Art have discoursed in a general way upon "the harmonic law of nature" as the source of the beauties of design. The notion of the perfection and symbolic character of certain numbers took strong hold upon the philosophers and artists of Egypt, Greece and India; and there can be no doubt that they sought to find an application of such not only to arithmetic, geometry, astrology and music, but also to the element of proportion in architecture. But little positive knowledge of this matter, however, has come down to us. Vitruvius hints of some such natural basis of proportion being known to the Greeks, but does not reveal what he supposed their secrets to be, except that he advances the opinion that the proportions of the human figure were taken as guides for the Orders and the distribution of the various parts of temples, which theory cannot be taken seriously in a literal sense, though the analogy between the ratios of the perfect human form

and the most charming examples of design constitutes a part of the analogy of which we purpose to treat. That numbers and measure furnish a tie between architecture and arithmetic, geometry and music, was observed, though obscurely, by Leon Baptista Alberti, and more accurately, though not altogether soundly, by the astronomer Keppler and by the Scotch author D. R. Hay, of whom we will speak more fully presently. Others, searching the origins of music, have proved that her harmony is founded upon laws of nature. And scattered here and there in various works may be found fragmentary or chance comparisons of color to musical tone, or of the rhythmical motive of some particular design or the architectural effect of a musical composition.

But, while music and architecture have thus been acknowledged to possess a few fundamental analogies, and the various arts have been separately shown to express many of the same principles of natural harmony, yet no one, as far as I am aware, has noted the completeness of their resemblance—has made, in short, any study of the matter as a whole; examining their common mathematical basis and, at the same time taking into account the difference in nature of imagination and charm which must necessarily separate an art existing in *space* from one in *time*. For unless we do this we can only prove an *analogy* in certain methods, which may, however, be the outcome of completely opposite artistic motives.

Whereas it is the purpose of this paper to examine the two arts in a comparative way, as far as necessary limits will allow, with the aim of proving that there exists between them a consistent and organic union. A relation, starting in the physical laws of light and optics on the one hand, and sound and hearing on the other, and in their rudimentary media of expression, such as notes, metres, tones and lines, colars and geometrical forms, and carried on through their respective systems of artistic and imaginative composition, design and execution.

Of course each has, necessarily, laws entirely its own and emphasizes certain

characteristics, which in the other are subordinate. Their difference is such as to separate them vastly in outward semblance and give them principles of structure peculiar to each, and an individual cast to all of their ideals. These essential points of difference we will note as they naturally arise.

Nor is it the intention to infer that either art is in any respect an imitation of the other. The Greeks, and probably the Egyptians, must have appreciated that certain of the values of their proportions were similar to corresponding values in music. But, beyond this, each of the two may be considered to have worked out its own way, irrespective of the other.

However, I think that the recognition of the fact that the arts of design are based upon universal harmonic laws and are closely related in method and ideal to the art of music would not be without permanent value, especially in such a time as the present when the practice of architecture and ornamental design have become but little more than the study and adoption of past modes and styles, often with no thought of their original meanings. And the more any common aim among the different phases of art becomes apparent, the less do they seem arbitrary and accidental; the firmer grows the belief, so necessary to the spirit of the finest work in art, that beauty arises out of truth.

As both music and architecture show many fixed principles of form and composition running through their most divers styles and the productions of races altogether unknown to each other, it is evident that neither can be a chance invention. If, then, it can furthermore be shown that these principles are to a great extent counterparts of each other and derived from nearly identical physical, physiological and mathematical laws, and that still further their ideals are in intimate sympathy, we may hope to establish this union to the extent claimed.

As the foundation of this relationship lies in the fundamental identity of light and sound, it will be necessary in the first place to determine the main features of resemblance of these phe-

nomena and of their respective perceptions by eye and ear, and to seek the meeting place, so to speak, of space and time. And as the second point to be observed is the universality of the laws of harmonic form, we may proceed to examine what correspondence as to relative proportion or ratio there may be between that limited number and range of sounds which the ear has selected as harmonious to that also limited range of colors and geometric lines in which the eye recognizes the beautiful, when, turning from the simple admiration of the loveliness revealed in nature's actual, living shapes, it essays to create ideals in form after its own imaginings. After comparing the physiological-mathematical bases of the two harmonies we will seek for similarity in the artistic principles of composition and design; in the manner of using and constructing an art out of the elementary scale of sounds and primary forms just mentioned.

Having thus examined the relations of their harmonic systems, the second part of this paper will be devoted to the expressive nature of these two art languages, inquiring in what they are at one and what at variance in imaginative and emotional ideal.

And lastly, by glancing over the historic developments of the two, we will seek to trace how in the most notable eras of artistic power these similar laws and motives have impressed similar characteristics of style upon each, and have guided them successively into the same paths of thought.

Light and Sound.

The experiments and discoveries of modern science have been gradually establishing a strong resemblance between the phenomena of light and sound. Each is a form of vibratory motion and is propagated in undulatory waves through various elastic media. The waves of light move at a much higher rate than those of sound; their speed being 192,500 miles a second, while sound has a rate of only about 1,090 feet a second. All sounds of whatever quality or pitch travel in the same medium at an even velocity

as do all rays of light. But the vibrations either in light waves or sound waves are not always the same in number for any given time. From this it follows that certain rays of light or of sound make different impressions than others upon the eye and ear respectively. Of this the practical effect is that there are various colors and sounds of different pitch.

The range of light vibrations, that is, from violet to deepest red, covers from 727,000,000,000,000 to 458,000,000,000,000 undulations that enter the eye in a second or a little less than an octave. The ear perceives a more extended range of about nine octaves vibrations, but of a much lower rate in the same interval of time. The organs of different people vary considerably in the limits of this range of perception.

Both light and sound obey the same geometric laws of reflection and refraction.

What is known as the phenomenon of "interference" is also common. If lines of light be passed through certain crystals, which have the property of separating their rays, and are then caught upon a screen we will have an alternation of light and dark bars, and if two tuning forks be vibrated, one a little more slowly than the other, a rising and falling of the sound will be produced. In both cases these alternating effects are caused by the rays crossing or interfering with the result of diminution of force in certain directions or spaces and reinforcement in others.

There are some features of difference, however, in their respective wave movements, as is shown in the property of light, known as polarization, which prove that the molecules in any particular ray move in a transverse direction to the line of the ray; whereas in sound the motion is back and forth in the line. Now, while this is probably responsible for some of the difference in phenomena, it has no practical significance unless it be held accountable for the fact that light travels in straight lines and therefore possesses the property of shadows, while sound, as everyone knows, is able to turn around cor-

ners, though with partially diminished intensity; somewhat in the manner that waves upon the surface of a lake curl around jutting points of land and diverge into bays and streams.

This is, of course, a fundamental difference; but when we consider an important distinction in the nature of the production and occurrence of the two phenomena, we see that it is this very difference in physical properties which makes possible any mental or artistic relations. But as this concerns more properly the relations of musical, as distinguished from ordinary sounds, we will discuss it later.

The theory of wave motion links space and time together and demonstrates light and sound to be products of essentially the same energy, perceived by different organs according to the intensity of that energy. Each phenomenon consists in the propagation of energy upon mechanical laws, identical in all leading respects.

A simple experiment, first made by Chaldin, the scientist, vividly illustrates how sounds may actually be made visible. A square plate of glass, supported at the middle by an upright rod, was covered uniformly with sand and a violin bow drawn across the middle of one edge, when the particles of sand, agitated by the vibrations, or by the little whirls of air set in motion by the vibrations of the glass, flew from the centre of the plate and collected in heaps along the diagonal lines. As the stroke was varied the sand shaped itself into many geometric figures.

Space and time themselves are less opposites than complements of each other. Motion and force are of course the particular attributes of the one, matter and rest of the other. Yet only by virtue of their mutual dependence may either be apprehended as sounds or forms. For sound and light consist, as we have noticed, in the transmission of force, yet by means of minute motions of matter. Mentally considered, too, the properties of space and time are inseparable. Matter alone is a dead thing; time supplies it with life and measure. Absolute force is an in-

conceivable abstraction; space adds form and proportion.*

Nature continually manifests motion in space or motion and space bound together as one; it is Life. This throbbing life of nature—not her visible forms or movements, but her harmonious ideal, so to speak—filtered through the intellectual and emotional or imaginative sense, as light through a leaded window of splendid hues, and made audible becomes Music, and made visible becomes Design in form, most notably Architecture.

The eye and ear present strong resemblances in construction and in the number and function of their parts, showing that nature has fitted them for the perception of analagous properties of matter.

Before proceeding to speak of musical sounds and artistic forms, as distinguished from sound and light or form in general, let us take a rapid glance at these two art systems and at those motives that set them apart from the other arts; as a traveler might peer from a height over a plain stretching away beneath him, to note the position of the hills and the winding courses of the streams and roads, by which he is to shape his way.

The beauty and emotional charm contained in works either of music or architecture, depend but little upon direct imitation of things in nature. In painting and sculpture, on the contrary, actual forms and color are represented. However, no artist is purely an imitator. He has to interpret, to choose, to dwell upon certain notes and harmonies; partaking to a limited degree of the musical motive of ideal arrangement and harmony. Imitative motives, as displayed in painting and sculpture, play an important part in architecture. But it is rather as a lovely crowning of the work than as its inner character or the sinews of its

* The analagous yet opposite natures of space and time are lucidly analyzed by Mr. Isaac L. Rice in a treatise entitled, *What is Music?* In this same work the identity of tones and colors, as being each forms of vibration, is noticed; also lines, as the unit of measure in space, are compared to metres, by which are expressed measure in time. The essential distinction in the beauty which characterizes time and motion from that of space and rest, is dwelt upon, but their unity of purpose the author confines to their common quality of being perceived as states of mind.

strength. All her distinctive power lies in the quality of design. A certain proportion between adjoining forms, as between succeeding sounds, is instinctively felt to be pleasing. Change one of the parts or one of the sounds sufficiently and the result will be discordant and disagreeable.

But more than this, the melodies and the structures evolved upon this feeling for harmony and fitness become raised to a higher level than the mere making of a pleasurable impression upon ear or eye. Mysteriously they gain the power to move the hearts and minds of men. How is this so? What are the secrets of the process that transform the mathematical and the useful into the beautiful?

Architecture represents the pure art of design in space; music, that in time. The properties of such art are abstract, nor do they contain any definite beauty or human feeling in themselves. Yet they may become mirrors of the imagination. They may be moulded by the emotions; as clay under the deft fingers of the sculptor. The designer in lines and colors seeks to produce objects of beauty as well as the literal interpreter of nature. So does also the designer in metres and tones. It is by creating harmonies upon inherent and constant laws (whose likeness in the two cases we will notice presently) that either succeeds in this, and this is done through means of *notes* or units of form, in whatever materials have been chosen or are at hand.

The musician arranges his metres and tones in melody and harmony, according to principles of measure and time. In the simple beginning of his art, he is content with a succession of single notes, as in simple songs and ballads. As the art advances notes of various pitch are combined to produce a single sound; or harmony, in its technical sense, is invented. Finally counterpoint combines and balances, as it were, different melodies upon harmonic principles.

The designer shapes his objects and builds his structures upon his ideas of proportion and order. They may be simple in line or composed of many lines. Consisting, as do Egyptian and

Greek colonnades, in the repetition of a few simple forms, or may be compounded of many lines and forms of varying structural motive, intricately interwoven and balanced, as in a Gothic cathedral; and the expression of these forms varies from simplicity to complexity, as much as do the systems themselves.

But to consider them more in detail.

The Theory of Harmony: Music.

All forms are not beautiful, nor all sounds musical. The musical are distinguished from the unmusical sounds in being caused by repeated impulses, and therefore vibrations, at regular intervals. For the production of a sustained sound or note it is necessary that there be a succession of impulses, that is, repetitions of the original noise, at regular intervals of time and exactly similar in duration, intensity and character. Such a note proceeding from a musical instrument or from the voice is produced by a succession of distinct strokes or impulses, but so extremely rapid that the ear grasps but the single sound. The frequency of this repetition determines the *pitch* or relative accuteness or gravity of the note. Its *intensity* and *quality*, which are the two other distinguishing features of sounds, depend; the first, upon the relative abruptness of the stroke or impulse, and the second, upon the character of the instrument or source of the sound.

But, "it is the pitch only of musical sounds," as Sir John Herschel says, "whose theory is susceptible of exact reasoning, and on this the whole theory of harmonics is founded." The exact nature of it comes from the fact that the *intervals* of the scale (as the separation of notes by virtue of the relative frequency of repetition of vibration is called) are permanently established in numerical ratios. If a string be vibrated so as to produce any musical note, as C, and then a string of half the length, but otherwise the same, be struck, the latter will make twice the number of vibrations as the former in the same time. The interval of pitch will be as 1:2, and the note of the shorter string is known as the octave

of the fundamental note, or, in other words, the C, next above in the scale. On the same principle, the numerical ratio, next in order of simplicity, namely, 2:3, gives the interval of the *fifth*, or C to G, if C remain the key-note; 3:4 produces the *fourth*, and so on for the other notes of the scale.

The general principle, and, until the appearance of the famous work, *The Sensations of Tone*, by Professor Helmholtz, the only one that could be offered upon which rests the consonance of tones, is that they all are governed by simple ratios whose terms differ but slightly. The primary intervals of the scale above given are the simplest ratios possible.

The ratios of all the consonant intervals are contained in the simple numbers, 1, 2, 3, 4, 5, 6, or multiples of them.

The three intervals above mentioned, *i. e.*, the octave, the fifth and the fourth, were the only consonances admitted as perfect in the Greek scales. The Pythagorean theory of consonances was that the simpler the ratio between the vibration numbers of two notes the more perfect the concord. This is nearly the truth, but is not literally borne out by the modern systems of harmony. For the *thirds* and *sixths*, whose ratios are next in simplicity to the above, but which had always been classed as imperfect consonances, are now considered as more agreeable and more productive of music than the fourths and fifths. The key-note, its octave and major third, sounded together, form what is known as the common, because most perfect chord.

Prof. Helmholtz, after abundant and conclusive experiments, gave the first thorough and scientific explanation of the causes of harmony and dissonance by investigating the physiological as well as the physical basis by which the musical properties of sound are distinguished.

He concludes that the distinction of consonance and dissonance is, primarily, the result not of the nature of the interval but of the quality of tone and the construction of the whole tonal system. The magnitude of the intervals is independent of this quality, but

"the harmoniousness of the consonances and the distinctness of their separation from dissonances depend on the quality of tone."

The facts by which he establishes the importance of these tonal relations are briefly these: Most tones are complex, consisting of a prime sound and several other simple sounds, called its partials or overtones, which the ear, however, does not ordinarily separately distinguish. Now, when two sounds are heard together their united sound is usually disturbed by the beats of the partials, with the result of breaking up the sound into pulses and causing a rough effect. This relation is dissonance. But, when "two of the lower partial tones of the notes combined are of exactly the same pitch," there will be no disturbing beats, or only of such small intensity as to be unnoticed.

Consonance is then "a continuous dissonance, an intermittent sensation of musical sounds."

The explanation of the long known fact that consonance is determined by the ratios of small whole numbers is found in the manner in which the ear resolves all complex sounds. Into the laws and mathematical expression of this we cannot enter, except to state the conclusion; which is, that just such ratios as these must appear between the partials and the prime tones; or, to put it differently, that the former must be either once, twice, three times, and so on, as great as the latter.

The elementary features, then, of harmony in sound are, that it possesses a continuous, smoothly flowing character, which results from an identity of certain of the simple sounds of which it is compounded; and, secondly, that the intervals, or difference in pitch between the notes that compose the consonance, may be expressed in the ratios of simple whole numbers.

The Theory of Harmony: Form.

Are any principles of harmony, such as the above, to be observed in form?

It is a truth, to which all nature as well as every work of design attest, that when two or several forms are seen together their relation is harmonious

when the forms in question have enough in common; that is to say, display sufficient uniformity in their elementary parts either by direct repetition, in whole or in part, or through evidence of organic relation and continuity between them. I do not mean simply as affecting impressions of congruity or incongruity through association of ideas, but as producing from physiological causes, pleasurable or painful sensations, just as combinations of sound cause the sensation either of consonance or dissonance.

The eye, if at all open to the beautiful, receives impressions of harmony or discord in combinations of line just as the ear does when sounds of different pitch are united. Of course no one would be so foolish as to propose that, for either of these senses, all things could be divided into two absolute classes of harmonious and inharmonious. But the lines which bind together the parts and give contour to a Greek vase, or still more, a perfect human body, are beautiful without regard to any school of taste. And many other objects which could be named, no one with even half an eye could think harmoniously put together.

It is much easier to observe some reasons for such instinctive choice in matters of design than in nature. For in the latter's own lines it is more the degree of consonance which may be noticed than a comparison of consonant and discordant. She is seldom positively discordant except when men take the trouble to make her so. But, that the harmony of her color, or the quality of tone, depends upon just such principles of unity painters show us every day.

We have in the sphere of architecture examples of the necessity of repetition of elements in such features as a row of columns, which must naturally be equally spaced (unless there is some other regular system of grouping), and the line of arches in a nave, which, though they differ to some extent in detail of ornament, would scarcely be made of various heights and spans.

A pattern for a wall surface repeats itself in regular spacings, not simply because it is cheaper to do it so, but

because the effect is more pleasing than restless impression which would be made were it laid out with no system.

Its skeleton lines are a system of squares, rectangles, or other simple figures; as is also the skeleton of a good architectural plan.

As to the combination of objects more distinct, we may cite a building having wings nearly detached. These must be treated with some similarity of line or feature to the main mass or they cannot be brought together for a unity of effect. This principle is so evident in all designs that there will be no necessity to multiply instances of it. The law of symmetry is a sort of epitome of it. Of course when such things are too baldly done, a tiresome monotony is the only result. Variety there must be or there is nothing to harmonize. The feeling of the Greek, the Burgundian, the Italian, as to what is the proper proportions of variety and uniformity have differed somewhat. But, in any style, without such repetition of elements, so that, through forms, however diverse, the same characters of line, color tone, or texture may be carried smoothly, unity of effect and therefore harmony would be impossible.

The eye looks for more or less continuousness of such feeling, and is offended when the treatment or color scheme is too much interrupted, too roughly contrasted.

This, then, is the same distinction which Helmholtz makes on physiological grounds between the sensations of consonance and dissonance in music.

Let us see for the next step if this basis of harmony in design is connected with any demand for the sort of numerical relations which determine the consonant intervals in music.

As the chief distinction between sounds is their difference in pitch, so the chief distinction between forms is their difference in shape.

Any one who has made any study of architectural design has probably realized that buildings of fine and harmonious effect follow, as to general dimension, the proportions of simple rather than irregular figures. That is to say, the relations of length to breadth and

other such proportions are as a rule expressed by nearly related numbers rather than by those widely separated. And were we to analyze the plans and elevations of the masterworks of the best days, we would find that such geometrical figures as the square, the equilateral triangle, and such rectangles, isosceles triangles and right-angled triangles as possess ratios of simple numbers, either as between the length of sides or degree of angles; we would find that such figures may frequently be circumscribed about their outlines and the parts into which the design is divided or inscribed upon diagonals.

If the properties of such geometric proportions have any influence upon the designs of the present day, it is purely an unpremeditated one. But with the ancients it was otherwise. To the Pythagorians and the Platonists geometric figure was an idea. The symbolism with which they endowed the harmony of number has lost all meaning or value to us, but the dependence of the element of beauty upon it, if such there be, should surely still be of interest to us.

The great architectural essayists since the period of the Renaissance, such as Alberti, Palladio, Vignola, De Quincey, Durand, Stuart, and the numerous more modern authors who have followed implicitly upon the same lines, have, after the manner of Vitruvius, thoroughly, and one may say exhaustively, displayed the works of antiquity in their exact form and proportion and lay down abundant rules for the perfect proportions of each Order and variety of building, in accordance with classic tradition. But they offer little or no explanation, save the necessary and non-committal one, one of a faultless eye, of how these inimitable proportions were originally evolved. A few other investigators, however, notably Ramsey Hay, a Scottish designer of the last century, and Violet le Duc, the famous French architect of recent times, have, by geometric analysis of the structures of classic and mediæval times, proved that the people of those days, and especially the Greeks, were aware of certain mathematical relations upon which they determined the proportions of

their most beautiful designs. Not that mathematics could have created design had the visual sense of consonance and congruity been absent, nor that beautiful architecture may be practiced by mere mathematical prescription (though certain writers seem to have thought so), after taste has fled. But simply, in my opinion, that those people, possessed with the finest sense of perfect and ideal form, discovered, in developing their systems of design, that the most harmonious proportions would result from leading dimension being made coincident with the lines of certain simple geometric forms, and such being discovered they used their knowledge with intelligence. Thus, according to the observations of Mr. Hay,* if a rectangle be circumscribed about the front elevation of the Parthenon, its lower line resting upon the upper step of the stylobate, on which stand the columns, being the base line of the columns, its two vertical sides springing from the extreme bases of the outer columns and the apex of the pediment touching its upper line, this rectangle will be such that its diagonals will divide it into two triangles, the angles of which are 90° , 60° and 30° . These angles are in simple ratios, such as 2 : 3 and 3 : 4, to the angles of the two triangles which compose a square. Other rectangles applied to subdivisions of this façade are also of a thoroughly homogeneous character, with the above inscribing rectangle and all the chief numerical ratios of the intervals of the musical scale are found repeated in the relations of their several diagonals.

Again, according to le Duc,† who believed that the modulus of the order was not taken at the base of the column, as generally supposed, but near the middle, we have the following: If perpendiculars be let fall from the middle of the exterior line of the angle columns, the triangle, whose base will be given by the intersection of these perpendiculars with the platform upon which the columns stand, and whose

* See *The Natural Principles and Analogy of the Harmony of Form*, 1842; *First Principles of Symmetrical Beauty*, 1846, etc.

† See *Entretiens sur L'Architecture*, vol. I., and *Dictionnaire Raisonné de l'Architecture Française de XVe au XVIIe Siècle*. Art.: Proportion.

apex is the apex of the pediment, will be the triangle given by a diagonal section of a pyramid with a square base and whose vertical section from the vertex, parallel to one of the sides of the base, is an equilateral triangle. And if this triangle, on the diagonal of such a pyramid, is applied to the Parthenon, it will be found that where its sides cut the lower line of the architrave the axes of the third columns from the end are determined, and that the intersections with the second columns gives the line from which the modulus was determined.*

The Roman Triumphal Arches and Basilicas reveal a conformity of principal dimensions to circles and equilateral triangles.

The finest of the French cathedrals were found by the last-mentioned author to be based upon systematic use of a right-angled triangle of peculiar simplicity and an isosceles triangle derived from it. The former, which appears to have been considered of particular value by the Pythagorians and other early Greek mathematicians, was such that its sides were as 3, 4 and 5, a perpendicular to the hypotenuse from the angle opposite divides it into two similar triangles. All the sides are divisible both decimally and duo-decimally.

And the other, which was the one chiefly used in the Gothic buildings and which also certain French archæologists have proved to coincide with the Pyramid of Cheops, is formed upon the same base as the preceding, and given a height equal to half the hypotenuse of the same. In other words, its base is to its altitude as 4 to $2\frac{1}{2}$.

The principle of the mean proportional is also one that many authorities have found to fit the lines of notable works. Many other writers have more or less thoroughly analyzed the geometric ground work of proportion,

though without establishing any other natural basis of harmony than that outlined above.*

A thorough investigation of this subject would be a lengthy work in itself, so we must be content with this bare mention of the most prominent instances of the influence of geometric figure upon the harmony of form.

The importance of this connection, as regards relations to things in music, is that the figures which have been adopted by the ancient masters of this art are those of most homogeneous character, the ratios of whose important parts are proportioned to each other with a simplicity equal to that of tones, which is as much as to say that the intervals of space or extent, by which the form of objects are distinguished, are determined as regards harmony and discord by ratios of small whole numbers, which ratios take a corresponding office in time. In short, that the simpler geometric forms constitute a foundation for the harmonies of design similar in purpose to the fixed ratios of the intervals of pitch.

The only author, to my knowledge, among those who have studied the geometry of design, who has made any direct comparison of it to the scientific basis of music, is the above-mentioned D. R. Hay. This writer reaffirms with more definiteness and example than any before him, the old Pythagorean idea of the universality of the harmonic ratios in geometry, music and the human figure. He makes some interesting studies of the geometry of the Parthenon, of which we have mentioned, and of the generating forms of Greek vases. He then draws some theoretically perfect figures, chiefly combinations of the circle, square and equilateral triangle. But in view of the greater importance of the physiologi-

* If this triangle was taken upon the same base as the rectangle of Mr. Hay, its height would be a few feet in excess of the other. But, as will be seen from the text above, its base is slightly shorter, and its height, therefore, is practically, if not absolutely the same. The measurements of the Parthenon made by Stuart and Penrose show the above geometric figures apply within fractions of a foot to its lines, and it is impossible to suppose that this result could have been arrived at unintentionally; especially in view of the well-known importance attributed by the Greeks to the harmony of number.

* Such discussions may be found in the following works: *The Geometry and Optics of Ancient Architecture*, by John Pennethorne, London, 1878; *Principles of Athenian Architecture*, by Penrose, 1851; Gwilt's *Encyclopedia of Architecture*; the works on *Gothic Architecture*, by R. W. Billing; the works on *Proportion*, by A. L. Fock, Amsterdam, 1875; *Traité Théorique et Pratique de l'Art de Bâtir*, by Rondelet, Paris, 1855; *Nouvelle Théorie du Module*, by Aurès, Nîmes, 1862; *Les Projets Primitifs*, by Hensylmann; and papers in the *Transactions of the R. I. B. A.*, by the last-mentioned author and by W. W. Lloyd, D. R. Hay, John Pennethorne and Baron de Geymuller, in vols. 1852-3, 1858-9, 1873-9 and 1891.

cal basis over the mathematical as the origin of harmony, which Helmholtz establishes, he decidedly overrates number harmony. It is one of the features of musical analogy, but not the only one. There is more in the beauty of form than this tame mathematical perfection. Like other formalists and echoers of Vitruvius, to whom this famous name was synonymous with architecture itself, he fell into the error of the day of regarding architecture as merely a sanctified geometry. Symmetry was too allimportant, and so such theorists lose sight of the fact that something else besides the mathematical exactness of proportion may enter into the creation of beauty. And furthermore, the dictates of construction and necessity give caste to what otherwise might be an entirely theoretic art. The objects created by design become in a measure a part of nature which surrounds them. What may be good in a palace would be quite unlively in a rural cottage. The connection of simple ratios with the harmony of sounds and forms is still a fact a most vital one—but it must be considered as a more or less variable result of æsthetic principles. The historic developments of scales and of standards of beautiful form show that they have been subject to change with the progress of taste.

On the other hand we may observe that the recognition of the extensive use of precise geometric relations by the ancients in their designs, does not place the idea of proportion in a more mathematical light than we at present regard it. For, while we follow blindly the classic proportions, the ancients themselves who originated these forms, united in one beautiful result their reason and imagination. Violet le Duc perceived that this was the true value of the geometric element of proportion, when he says that design arrives "by application of reason to the satisfaction of the instincts."

For though proportion was undoubtedly carried almost to the point of a science by the ancient and mediæval builders, it is evident that such a science could have had its source nowhere but in the faculty of artistic

perception, and be of possible service only when practiced under this same indefinable sense or knowledge of the beautiful. The instinct of the true and cultured eye led the first designers to the mathematics of its expression. That the ocular sense agrees with a far reaching natural law is a matter of later discovery. The geometric figure never had any value in itself, nor may their relations be fixed by exact law. Knowledge of the perfect ratios is sound, or geometry by no means assures the production of art in either. An equilateral triangle is certainly more harmonious than a very irregular one, but the eye is not offended by the latter as is the ear by the mere sounding of a discord. It is only when some design is laid out upon such an unshapely figure that the eye realizes the dissonance. Beauty appears only when the lines of the generating form have become lost to general discernment amid gracefully varied lines and modeled surfaces. Music, which cannot be said to lack expressive possibilities, is more rigidly exact in the basis of harmonic proportion. However, as musicians will tell you, the ear does not require absolute perfect concords; were it so, there could be no music but of the tamest character. A separate row of keys would be required for every tonic. But the matter is practically arranged by a compromise in which all the intervals are tempered, as it is called. So in architecture. A series of forms perfect in their mathematical relations can seldom be combined, nor would it be profitable to attempt only such. Art typifies life, movement and personality. This spirit must be infused into the inactive, impersonal perfection of mathematics ere it may give birth to beauty.

The Artistic Systems of Harmony.

The feeling for consonance, which underlies all music and of which the ratios above mentioned are but the numerical expression, has its correspondence in the arts of form as much as the ratios themselves have in geometry.

In the voice and every musical instrument we have a scale of several

octaves and several keys, and in designing objects or buildings we have a more or less wide range of shapes, planes and relative sizes of geometric forms which it would be possible to use. And as no melody can be built out of the accords of a single octave, but must combine consonant notes or chords of several in a well-proportioned succession or arrangement, so no pleasing design can be made out of merely a circle, a triangle or a parallelogram, but must be shaped from a selection and combination of such simple generating forms in just such variety that there is a consonance in the series of parts and in the whole. A random succession of chords on beautiful lines can result in no composition however simple, either in music or design. The idea of *measure* must be introduced. From the plainest of songs to the most elaborate effects of instrumental harmony, there is necessity for measure; *i. e.*, for arrangement in accent, metre, phrases, melodies, and regular distribution of these. There is a like demand in architecture. A building, or any feature of a building, such as an entrance or a colonnade, must be given certain marked divisions of parts. A façade must have more or less grouping of its arcades, colonnades, windows and other elements of its treatment, which must also be distributed at carefully studied intervals.

But this requirement is not fully complied with by simply dividing a wall, an entablature, or other such feature into three, five, or any number of equal parts. There should be an inequality in the divisions. For instance, a long part between two shorter ones, as in the horizontal divisions of a façade of three stories, as in the vertical divisions of a "pavilion" treatment, or as in the base, shaft, and cap of a column. Or simply a long and a short division may have proper effect as in a building having a pronounced basement, and the wall above unbroken by horizontal lines up to the cornice, or in the Grecian Doric column, which has no base. Or, again, three parts, successively increasing or decreasing from top to bottom, are used as in the Italian palaces.

Or, yet again, the proportion of two equal, or nearly equal parts and one shorter may be observed as in the relative heights of architrave, frieze and cornice in the Greek orders, or with the third part greater than the others, as in the Roman orders. Now this, considered as an artistic process, is nothing more nor less than the principle of *metre* and *rhythm*, as to music and poetry; and *proportion*, as to design. And the same ideas of variety and consonance which govern the general divisions and distribution of quantities in either, hold also for the modeling and defining of parts and of the whole—the treatment of profiles and roof lines and the grouping of masses—in other words, *melody* and *outline*.

A succession of rhythms, regular, without being too uniform, under systems of modulation (the passing from one key to another) produces melody. Proportion develops through the repetition and binding together of well-proportioned units, and in graceful mediation between horizontal and perpendicular planes.

As the various parts and features of a design will naturally be carried out upon different metrical systems, if we may be permitted the term, their relations to each other and to the whole have to be thought of. A façade is always given a few main dividing lines—often only horizontally, especially if Italian influence is felt, but in many other cases vertically as well. It is, we will say, to be three stories high and composed of as many superimposed orders. The primary triple division is clearly defined and each order has its own variously proportioned subdivisions. A grand entrance or a loggia will be handled on a somewhat independent scheme. If the doors or rows of windows, the portico, the loggia be any of them, made too large or too small, too emphatic, or insufficiently so, a discordant effect will be given to the whole design.

The Greeks and the masters of the Renaissance were especially successful in obtaining just that variety, yet unity of size and form as yields an effect of harmony and life. In the façades of Bramante may be especially noticed

the systematic use of broad and narrow spaces between openings, pilasters or other members, and the adherence to two or three ratios for the proportioning of all the prominent divisions of an entire building.*

This is surely similar to the artistic laws that govern the construction of melody; and these laws of form—viz., rhythm and melody in music and proportion and outline in architecture (which in either case are in a degree interchangeable, or at least not distinctly separable terms), are the primary and invariable principles through which their organic form is acquired.

As we have said, in the finest works the general proportions, as the length to breadth of a building and of many of its minor features are determined upon regular geometric forms; but in all that relates to the grouping and distribution of these parts—the gradation from greater to less, the bringing together of elements not in themselves consonant, the balancing of like with like, the emphasizing of the principal theme and all such motives, in one art as in the other—we must go beyond the sphere of mathematical regulation. For instance, all the windows of a front may, perhaps, be twice as high as broad, yet those of each row will be of a different scale of size. And the determining of such relative scales is a matter that cannot be brought down to rule or to definite mathematical formula, except in a traditional sense, that a thing once well done may be repeated under similar conditions. The column and entablature and the gable roof are the notes of the structural theme of the whole of Greek architecture. The curves of the Greek mouldings, with slight variations, repeat themselves through history as often as the leaves through the forest, much as modes and forms of composition in music recur unnumbered times.

But, with all the reiteration of such ideas, two distinct elements in proportion may be observed. In the first place, it is the seeking of geometric

harmony; and secondly, it is a rhythmic, melodic and harmonic sequence and combination of forms or notes, such as appeal to the æsthetic sense and eye and may be judged by them alone.

It is much the same with music. For composition and execution with her depend, partly, upon the knowledge of and ability to use the scientific harmonies of sound, but, for the rest, upon her sublime and lovely power of speaking the pure, unfathomed language of the soul.

"The mystic powers that in bless'd numbers dwell."

Such a union we know exists and is of decidedly similar nature in time and in space.

The leading artistic ideas or laws which in different cases go to make up rhythm and proportion are the same. Some of these we have mentioned, as the aim of attaining variety in unity, subordination of minor to major motives, grouping, massing, contrast, complement, gradation, and all such. These being principles of all nature's forms of organic life, their necessity is observable, though to a less extent, in painting and every other art. The separate existence and influence of these latter qualities in the several arts have been so frequently established that it is needless for us to follow this general comparison into further detail.

Some of the laws of consonant form, however, belong more exclusively to the structural arts. Thus repetition of forms and themes, and accent, or stress laid at intervals upon certain such: the constant dependence upon which the most superficial glance at musical and architectural work would demonstrate. Symmetry is more vigorously enforced in design, but balance, which is next door to it, is as necessary in music.

But there is one more important element of musical structure, namely, that of key. Musical writers have frequently noticed that the tonic system of key imports to music structural system. Mr. I. L. Rice, in *What is Music?* goes to the extent of calling the tonic "the centre of gravity of the musical scale;" and the dominant, whose action

* This *travée rythmique* of the palaces of the Cancelleria, the Giraud, and of many studies by Bramante is discussed by the Baron de Geymuller in *The Transactions of the Royal Institute of British Architects* for 1891.

is opposite to the tonic, as "the audible manifestation of the centrifugal force."

The various parts of a melody may modulate into many keys, but the fundamental note or tonic with which the piece began holds the modulation in check, and the melody ends in it. The interlacing figures of a piece of ecclesiastical music, which seem anxious to fly off in all directions, centre finally into the tonic chord and are unified thereby, much as the multiplicity of forces in a Gothic vault equilibrate each other and gather together their thrusts into perpendicular shafts. The function of key reflects the general law of attraction and gravity and its opposites. But I think we may legitimately carry the comparison a step farther and see that it is more specifically paralleled in form and design through the principle of stability and the effect of a predominating system of lines according to the plane in which they are carried.

We have already touched upon the resemblance between modulation of key in music and that element of proportion which endeavors to mediate between different planes of treatment. Lack of modulation, as in the chants of barbarous people, has the same monotonous and dreary effect, though often with its own impressiveness, as an unbroken expanse of wall or cornice line, a chimney-like tower, or any such case where a single plane of treatment is almost literally adhered to. But if the stretch of wall be broken by porticoes or by emphasis of angle, and the tower be crowned, as the Italian campanile, with lightsome forms, life and gracefulness are at once introduced, as will be done in music by variety of key.

As there are only two distinct varieties of key, the major and the minor, so there are only two manners in which object may be in absolute stability—the perpendicular and the horizontal. The latter is the entire absence of motion, the inertness of matter; the former bespeaks life, but life in repose. All forms that lie in arched or oblique lines suggest active forces and motion, as the gable, the flying buttress. Musical pitch is governed by the quality of

key. The fundamental key of a piece is its bond of unity. Likewise, in architecture, the degree in which work obeys gravity, unreservedly as does the classic, or seeks to defy it as the Gothic, is directly referable to the relative ascendancy or depression of its key; in other words, the preponderance of perpendicular or horizontal line.

The prominent keys of a piece of elaborate harmony become resolved into what is called its tonality, or the recurrence and clinging to certain tones and chords. It is the coloring of music. Tone, as we have seen, bears a relation to music through similarity of its rudiments and principles of harmony to the harmonic laws of sound as established in the systems of intervals which determine them; and, also in that the laws that govern the proportions of form are largely the same as those that lead to rhythm and melodious and harmonic distributions of notes and chords. But the quality of tone itself of course has its more literal visual correspondent in color. The term *chromatic*, used in music, and *tone*, so frequent in studio parlance, prove a tacit acknowledgment of the identity; and as color is of great importance in all design, though sometimes neglected, we may be permitted a few words about this relation.

Neither tones nor colors may be satisfactorily confined to precise limits of forms, unless they be of extremely conventional or inorganic character. Some of the loveliest orchestral effects, as in a symphony, depend upon tones being spread over rhythms and carried through the melodies, swelling and fading in a system considerably independent of the measured forms. This tonality and value of key is continually displayed in nature's aerial coloring.

We look out of our window at an extended stretch of field and wood, gathering in the distance into a ragged line of hills. It is morning. The warm, yellow sunlight bathes the whole landscape. If we fix the eye upon one object at a time, we see them each in their own vivid colors—the thousand different dewy greens of leaf and turf, the gray weathered shingles of the barns, the spotless white of the farm-houses, the staring red of the corn

cribs. But if we look out at no one form in particular, and with eyes perhaps a trifle closed, we perceive one pulsating, glowing, golden tone, streaked with bluish shadows, which fills the whole air and seems to penetrate every patch and fleck of other color, blending them all toward itself, so that each individual color appears but a variation of the yellow sunlight. Even the blue of the distance and of the sky has a light and watery tone.

It is a little later in the day. A mist has been floating in from the sea, obscuring the sun. The warm tone has vanished. The various objects that we saw before are still in a general way red or green or yellow; but they are entirely different reds and greens and yellows, now that the sun no longer sheds its gladdening rays over them. The whole scene is keyed to a cool, gray tone that brings out deep greens and purples where we had never noticed them before.

Again on another day, at sunset, on the shore of a lake. Day is fading and, with it, strong light and corresponding shadow are blending into one. Forms have become vague, tones accentuated. A fathomless rosy and golden light is in the west and seems to flow down from the sky over the distant hills and float toward us, gradually diminishing through intervening colors into which it instills its purple and its madder glow, until, with a last burst of fire, it plunges into the glistening sapphire of the lake.

Not only in atmospheric effects, but in individual objects, may be noticed the independence of color and form. Look at an autumn leaf or gay plumage of a bird and see how the colors run over the surface in spots and streaks, often with seaming wilful disregard of the organic lines.

These principles are evident in the noblest works of architecture. Organic forms, either of sculptured relief or group of mouldings (a capital, a cornice, or an arch are, in their own way, decidedly organic), are left, not necessarily colorless, but at least in monochrome, or with sparing touches of other tones. Brilliant color, where introduced, is confined to geometric and conventional

forms, chiefly in flat inlay or intaglio motives and mosaic.

A successful interior will not be obtained by simply rendering in strong colors (even though contrasting well in the abstract) all the various architectural members of the treatment. Such a proceeding would be crude and unlovely. The scheme of color tones should spread through the whole room, paying heed to only a few of the most important divisions of the form. We may very likely need to mark frieze and cornice from the wall panels by some difference in tone, but do not treat caps and mouldings like an illuminated manuscript. Put the illumination upon the flat surfaces.

Perhaps the highest application of true color feeling in design is in the Ravennà and Palermo mosaics and the thirteenth century colored windows. In these glorious works, figures, animals and other forms are found united with the most intense and splendid color; but the tonal loveliness would be inevitably ruined were it not that there is a severe avoidance of accurate drawing and delicate outline.

Modern architecture seldom commits the sin of adding brilliant color to highly organic forms, but we usually go to the other extreme and ignore color altogether. Yet rich, full color, finely used and in the right place, is necessary for the complete carrying out of the architectural idea. Modern music could never have come into existence had not the ideas of tone developed as well as those of measure and time.

Any building, unless done in brilliant colors, is a pictorial study in monochrome, whether the designer has concerned himself about it or no. Stone, terra cotta, iron, wood, all vary in texture, and therefore in the quality of light they reflect. That whole part of a building which is executed in one material, say stone, will bear a distinguishing tone from another part done in plaster and terra cotta, however like is the design. Therefore, if for no other reason, designers know that to obtain artistic results they must treat outlines and ornaments with modifications of character accord-

ing to each particular material in order to bring out the most valuable qualities of that material, and must, as far as possible, group or distribute the various materials used upon consistent schemes of balance and proportion, just as a composer must keep in mind the *timbre* of the instruments he is writing for, and distribute the work accordingly. These qualities it must be admitted play a more vital, because more constant, part in modern music than they have ever done in architecture, but not more than they may in some future style.

Texture and color qualities are bound to exert a strong influence for or against the harmonious effect of the structure. It is only in modern times that there has been any failure to realize the importance of these tonal values; and that any one has thought of executing identical forms indiscriminately in many materials, regardless of their proper aptitudes. And only in these days has it been so largely attempted (how often with conspicuous lack of success) to give one material a superficial resemblance to some other, in order to carry out in it a scheme of ornament which belongs by nature only to the nobler—proving, though vicious itself, the value of tonal harmony. Sunlight always adds color to form. In the mere presence of light and shade, color, in a simple state, is continually before the designer.

But the quality of shadow has certain interesting relations of its own. Of the pitch and quality of sound we have spoken. Intensity, its other distinguishing feature, is present in form in the principle of shadow. It is to the one artist what silence is to the other.

Some pages back, it may be remembered, this phenomenon of form was mentioned as one of the essential points of variation between light and sound; but that this was offset by the difference in the manner of their occurrence. By which we mean this: Sounds are produced from innumerable sources and of infinitely varied duration. We live in a continually changing sensation of sounds, extend-

ing from occasional silence to the roar of the tempest and the crash of thunder.

But light comes to us from a steady source, that clouds or fog but slightly dim; and when we need artificial light we wish it to be just as uniform. Were it not for the law of shadows night would be but a slightly diminished day, and we could have no art of form save in lines upon flat surface.

It would be as though our ears were to be besieged by an unceasing volume of sound from some great instrument which varied in pitch but never in intensity. For as rays of every color come from the steady light of the sun (the distinguishing colors of objects being due to the fact that only certain rays are reflected to the eye, and the rest absorbed, refracted or reflected in other directions), so a series of sounds may vary in pitch while being all of the same intensity.

The musician creates the very sounds he desires—now soft, now loud, sudden and sharp, or gradually swelling as his effect requires. The architect and sculptor cannot create their light, but they *do* create their *shadows*, through modeling and shaping forms. Some parts may be given faint shadows, others strong, passing gradually from high light to deep dark, or contrasting boldly, according to the wish—spacing light and shadow and grading them as the musician does with sound and silence.

Shadow is also concerned with the degree of relief of the work from the dominant or average plane, thus becoming interwoven with the ideas of pitch and key. Just as sculptured ornament may be in high or low relief, may also be the architectural forms themselves. Thus the façades of the early Renaissance are in much lower relief than those of a later period, and the Greek work on the whole is less bold than Roman and Mediæval. The forms of Gothic invention are evidently more intense than the classic, whether from a structural or a mental point of view. Classic outlines show simplicity, delicacy and calmness. But mediæval crockets and gargoyles, deep recessed portals, steep gables and soaring pinna-

cles reveal a mind wrought to an intense point of spiritual enthusiasm.

There remains unmentioned one important and elementary characteristic of music. This is the distinction of simple melody or single note succession from *harmony*, as technically limited, to music executed in chords, or by several notes of different pitch sounded simultaneously.

From a literal point of view, namely, that two things cannot occupy the same space at once, harmony, in this sense, and counterpoint do not exist in form. But two objects, differing in form or color, may be *seen* at the same time and act mutually upon one another, producing an impression either of harmony or discord. Every design, it may be objected, would be brought under this category. That may be, but not equally. A design of great simplicity and singleness of motive more clearly illustrates melody than harmony. Of this sort is purely columnar architecture and also the façades of the early Renaissance, which mainly consist in rhythmic studies upon broad, flat surfaces, and delicate outlining of the forms. There is seldom, in such style, attempt at much massing of features opposite in character. But all such design as does not rest content with repetition of a proportioned unit and succession of simple rhythmic forms, but seeks to work together into a consonant whole several forms, clearly distinct in structure and in the kind of proportion they suggest; such motives of design, I say, spring from the same idea of composition that gives rise to counterpoint, even though it cannot be said that one may distinguish in an absolute manner between such work that is fashioned to this harmony from that which may more properly be termed melodic.

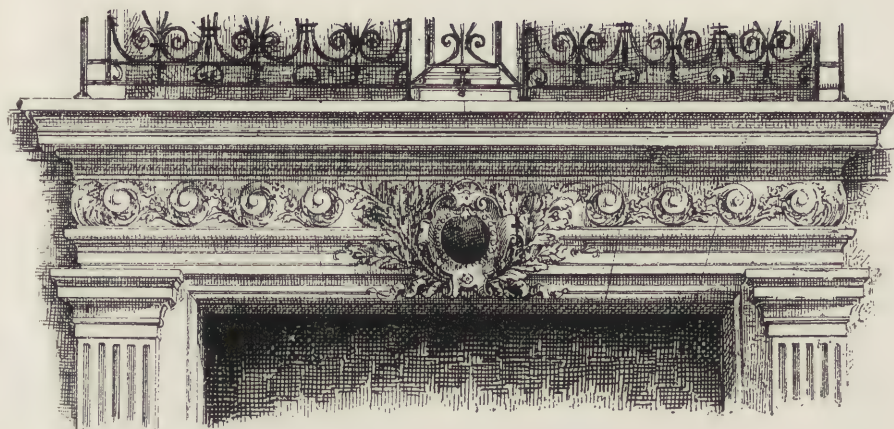
In music there is a clear distinction between the succession of single notes

and the simultaneous sounding of many. Whereas in architecture the change is so gradual from the repetition of a simple motive as a column and entablature to the complicated effects of arch motives, and plans, broken into wings and compound systems of grouping, that a separating line has naturally never been drawn. In the typical extremes of either motive, however, the difference is very strong. On the one hand, such work as the Greek, which uses but one or two general structural motives and the simplest schemes of proportion in consequence; and on the other design that calls in play a number of distinct motives as the Gothic, and develops a system of proportion, depending on balance and gradation between many structural parts. The former class, named or unnamed, which is the classic, and a large element of the revived classic, typifies melodic composition, and the latter, which is in part the Roman, the Byzantine and the late Renaissance styles, but especially the Gothic, carries into effect the artistic principles of harmony and counterpoint.

Brief in detail as such a general analysis as this has necessarily been, it will, I think, suffice to establish the fact that the harmonic structures of music and architecture are the outcome of the same primary laws of form, taking effect in different conditions and surroundings. The similarity is particularly remarkable in the recognized principles of measure and distribution, or rhythm and proportion. But also the vital characters of key, tonality, quality and intensity have their correspondence in similar properties in the arts of abstract design. And as, besides, their physical bases are to a large extent identical, it seems reasonable to suppose they may be found to manifest, though in different environment, many of the same conceptions of the beautiful.

H. Toler Booraem.

(TO BE CONTINUED.)



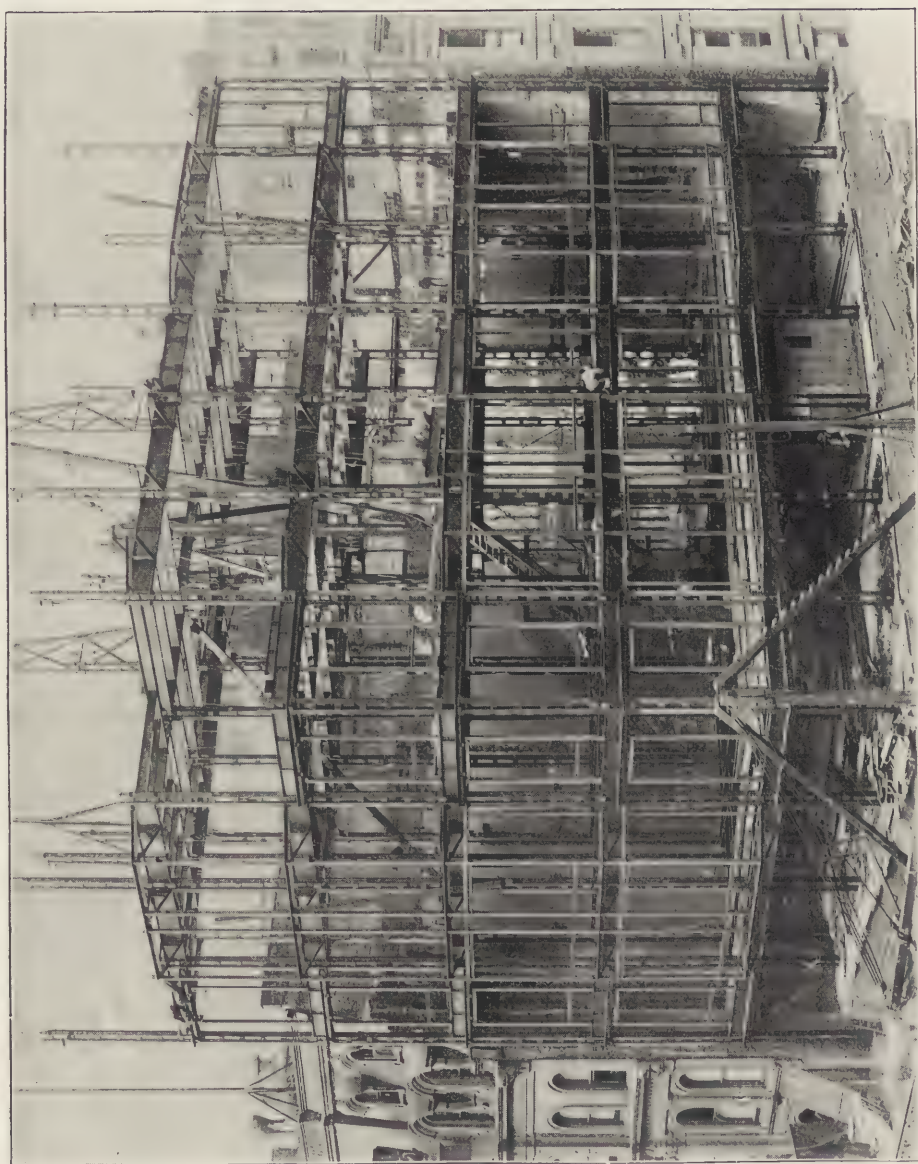
A WHITE ENAMELED BUILDING.



CHICAGO has been treated to a most novel sight. On one of its crowded thoroughfares a sixteen-story building has been in course of erection, the two lower floors of which are occupied by one of the largest dry-goods establishments in the city, and the daily routine of business goes on without interruption while the fourteen upper stories of steel fire-proofing and cream-white enameled terra cotta climb up into the sky to a height of 200 feet. It is the Reliance Building at the southwest corner of Washington and State streets, 55 feet on State street by 85 feet on Washington, and the plans come from the office of D. H. Burnham & Co. Mr. Charles B. Atwood, architect; Mr. Edward C. Shankland, M. A. S. C. E. and M. I. C. E., of London, engineer.

Some five years ago there had been a five-story building on this site of very heavy masonry construction, the lower floor of which was occupied by a National Bank. The leases of the upper floors did not expire until May 1, 1894, but as on the removal of the bank to its own building it was deemed desirable to arrange the first floor for store purposes, plans were made in 1890 for a sixteen-story building by Mr. John Root, and the foundations and first story of this new build-

ing were put in, the upper four stories of the old building being held up on screws, while the first story of the new building was slipped in under them. This spring, when the leases ran out and it became possible to proceed with the work, the original plans underwent radical changes, and Mr. Atwood conceived the idea of using cream-white enameled terra cotta for the exterior, with the exception of the first story already completed, which is of polished Scotch granite. The somewhat limited ground space and the great height of the building present difficult problems to the architect who attempts to produce an attractive structure, and with its plate-glass foundations, which the shopkeeper demands, it is hardly to be supposed that even the designer will consider it a masterpiece. Still there is one most important feature which, regardless of the architectural beauties of the structure, must be considered; and which will make this building stand out as a conspicuous mark in the history of architecture in America, namely, the use of enameled terra cotta for the exterior. The question of being able to obtain this material was a serious one. However, the Northwestern Terra Cotta Co. was able to guarantee the required conditions, and they have produced a fine and novel material from the first story up. Should



RELIANCE BUILDING—JULY 16, 1894.



RELIANCE BUILDING—JULY 28, 1894.

enameled terra cotta prove to be what is claimed for it, if it stands the test of Chicago's severe winters and changeable climate, there can be no possible doubt but what as a material for exterior construction it will be largely used in such cities as are afflicted with a smoky, sooty atmosphere. The idea of being able to wash your building and have it as fresh and clean as the day it was put up, must undoubtedly attract people to the use of this material. No doubt more ambitious conditions will follow with the introduction of extensive color schemes and more elaborate ornamentation. There is certainly no limit to what can be done in this direction, and with a perfect assurance that the material can be produced and that its quality of endurance is assured, why should architects and the public complain of the monotony of the dull greys, browns and reds of the present material used in building. It is to be sincerely hoped that the next enameled building may more extensively introduce color. However, the first step is the important one, and the boldness of the architect who took the first step is to be commended.

In the Reliance Building the design of ornamentation adapted by Mr. Atwood is quite simple, being of a somewhat French gothic feeling, but as the building is purely a commercial one, there is little elaboration. The accompanying illustration gives a fair idea of the terra cotta work, except that one loses the exquisite color and enameled effect, which is certainly most beautiful. The building being very narrow, compared with its height, especial attention has been given to designing the frame-work, which is of steel and it carries the outer walls as well as the floors of the building. The Z bar column, with its horizontal cap plates breaking the column in two at every story, was discarded and a new column used composed of eight angles. The ends of this column were planed off and connected by means of vertical splice plates. A clause in the specification will show the requirements in this particular, which is as follows:

"The columns will be made in two-

story lengths, alternate columns being jointed at each story.

"The column splice will come above the floor, as shown on the drawings. No cap plates will be used. The ends of the columns will be faced at right angles to the longitudinal axis of the column, and the greatest care must be used in making this work exact. The columns will be connected, one to the other, by vertical splice plates, sizes of which, with number of rivets, are shown on the drawings. The holes for these splice plates in the bottom of the column shall be punched $\frac{1}{8}$ small. After the splice plates are riveted to the top of the column, the top column shall be put in place and the holes reamed, using the splice plates as templates. The connection of joists or girders to columns will be standard wherever such joists or girders are at right angles to connecting face of column. Where connection is oblique, special or typical detail will be shown on the drawings."

This column also being open to bottom admits of putting the pipes in the corners of the columns and inclosing them with the fire-proofing surrounding the column.

For wind bracing, instead of tension rods, which had been used heretofore, it was determined to put plate girders 24 inches deep at each floor between the outside columns, thus binding the columns together and transferring the wind strain from story to story on the table-leg principle. These plate girders are bolted to the face of the column, and form a perfectly rigid connection with the column. The columns are in two-story lengths, and adjoining columns break joints at each floor.

Every piece of iron in the construction, including all the roof beams, is thoroughly fire-proofed with porous fire-proofing. Each piece of fire-proofing around the column is wired to the column with copper. It was specified that:

The steel may be made either by the Bessemer or Open Hearth Process. It must be uniform in quality and must not contain over .10 of 1 per cent of phosphorous. The steel shall have an ultimate strength of 60,000 pounds

per square inch, and shall not vary from this more than 4,000 pounds per square inch either way. It shall have an elastic limit of not less than one-half the ultimate strength; an elongation of not less than 25 per cent in 8 inches and a reduction of area of not less than 45 per cent at point of fracture.

All blooms, billets or slabs shall be examined for surface defects, flaws or blow holes, before rolling into finished sections, and such chippings and alterations made as will insure perfect solidity in the rolled sections.

A test from the finished metal will be required, representing each blow cast; in case the blows or casts, from which the blooms, slabs or billets in any reheating furnace charge are taken, have been tested, a test representing the furnace heat will be required, and must conform to the requirements as heretofore enumerated.

A duplicate test from each blow or cast and furnace heat will be required, and it must stand bending 180 degrees over a mandrel the diameter of which is equal to one and one-half times the original thickness of the specimens, without showing signs of rupture either on convex or concave side of curve.

After being heated to a dark cherry and quenched in water 180 degrees Fahrenheit it must stand bending as before.

The original blow or cast number must be stamped on each ingot from said blow or cast, and this same number, together with the furnace heat number, must be stamped on each piece of the finished material from said blow, cast or furnace heat.

No steel beam or angle shall be heated in a forge or other fire after being rolled but shall be worked cold unless subsequently annealed.

Steel for rivets throughout this structure shall have an ultimate tensile strength of not less than 56,000 nor more than 62,000 pounds per square inch, an elastic limit of not less than 30,000 pounds per square inch, an elongation of not less than 25 per cent in 8 inches and a reduction of area at point of fracture of at least 50 per cent.

Specimens from the original bar must stand bending 180 degrees and close down on itself without sign of fracture on convex side of curve. Specimens must stand cold hammering to one-third its original thickness without flaying or cracking, and stand quenching as heretofore specified for rolled specimens.

Where wrought iron is required by plans and specifications, it shall be tough, fibrous and uniform in quality.

It shall have an elastic limit of not less than 26,000 pounds per square inch. It shall be thoroughly welded during the rolling and free from injurious seams, blisters, buckles, cinders or imperfect edges.

When tested in small specimens the iron in no case shall show an ultimate tensile strength of less than 50,000 pounds per square inch, and shall have an elongation of 18 per cent in 8 inches.

The same sized specimens taken from angle and other shaped irons shall have an ultimate strength of not less than 50,000 pounds per square inch, and shall elongate 15 per cent in 8 inches.

All iron and specimens from plate, angle and shape iron must bend cold for about 90 degrees, to a curve whose diameter is not over twice the thickness of the piece, without showing fracture. When nicked on one side and bent by a blow from a sledge, the fracture must be nearly all fibrous, showing but few crystalline specks.

Cast-iron shall be the best quality of metal for the purpose. Castings shall be clean and free from defects of every kind, boldly filleted at the angles, and the arrises sharp and perfect.

Cast-iron must stand the following test: A bar 1 inch square, 5 feet long, 4 feet 6 inches between bearings, shall support a centre load of 550 pounds without sign of fracture.

As stated in the beginning of the article, the sight of seeing a tremendous building pushing up into the air while one can safely stand at its base and look into shop windows, crowded with the usual display, is, to say the least, rather out of the usual. However, the architect and contractors



RELIANCE BUILDING—AUGUST 1, 1894.



RELIANCE BUILDING—CLOSED IN NOVEMBER 8.

had the material all ready to go up, and on May 1st, when the building was free—that is, the four upper stories—a protecting platform had been built just above the store front, covering completely the sidewalk. It took only a short time to demolish these upper stories, and the accompanying illustrations show how rapidly the steel frame-work and enameled terra cotta went up. The four illus-

trations represent conditions July 16th, July 28th, August 1st and Nov 8th, 1894. That the fire-proofing work and finish of the interior will progress with equal speed is suggested by the fact that the building is to be ready for occupancy January 1, 1895, and leases are already signed from that date. That this, the first enameled building erected, should be watched with unusual interest is only natural.

Chas. E. Jenkins.





RECEPTION ROOM IN OFFICES OF HENRY IVES COBB, ARCHITECT.



THE HISTORICAL MONUMENTS OF FRANCE.



FRANCE is the first country in Europe and, therefore, for us of European race the first country in the world in the importance of its architectural monuments. There is no Grecian architecture there, not even at Marseilles; but then Grecian architecture is an affair not of monuments but of ruins and documentary evidence; to study it is to study an abstraction made up from comparison and inference. But as for those styles which we know from structures which remain, complete or reasonably complete, France is easily the first of lands. In Roman buildings her show vies with that of Italy and excels that of all other countries in view of the fact that the only large and nearly perfect Roman temple stands in Nîmes, and the only remaining Imperial bridge, with its two memorial arches, one at each end, stands at St. Chamas; that the only great theatre which has preserved its stage wall nearly perfect is at Orange; that one of the two or three great aqueduct bridges, and probably the most elaborate and attractive one, still spans the Gard; that nine out of the twenty existing triumphal arches or gateways which are in part triumphal arches, two of the four best preserved of those amphitheatres which can be said to exist in a state other than ruinous, two of the four monu-

ments of obelisk-like uprightness, and furthermore a great share of the less perfect or less important Roman buildings of the whole Mediterranean world, from the Euphrates to the Atlas and the Grampians, are preserved on her soil. In the post-Roman round-arched style, or styles, France has her great display; for if the Turkish Empire has, with North Eastern Italy, the greatest share of that of the early centuries, and if Germany has great cathedrals like Spier, Worms, Trier, Mainz and Bamberg, which were not destroyed to make room for their Gothic successors, France retains a host of Romanesque churches, in the south, in the north-west and in the centre, rich in decorative sculpture, admirable in design and construction, almost perfect in preservation except where the accursed restorer has made them fresh and sleek. Neither English "Norman," nor German "Byzantine" (two appellatives which rival "Gothic" in absurdity) can rival the French Romanesque in the beauty of their sculpture, nor can the smaller round-arched churches of either vie with those of France in their general completeness and elaboration, noble exceptions, like the great Saint Martin at Koln, always being admitted. And there is such an astounding mass of this Romanesque art. One supposes, too hastily, that the better and richer Romanesque churches were all swept away by the workings of the great

Gothic spell, but it is not so. For the Gothic period itself, of course, there is no other art worthy a moment's serious comparison with that of France. After familiar living with the French churches, those of Spain seem fantastic; those of Italy unreal, and as if built in a dream, however exquisite in detail; those of England small and petty; those of Germany stiff, labored, the work of academically-taught graduates of schools of art, if we can imagine such to have existed in the fourteenth century. But indeed the supremacy of French Gothic no longer needs to be urged. As for the art of the Renaissance, nothing indeed exists in France like the Italian churches, that must at once be granted; and the palace-front and the *cortile* of the Italian cities are also southern products which the northern towns know not; but the Château of the sixteenth century, anywhere north of a line drawn from Nantes to Lyons, what a noble creation is that! And how rich is France in those splendid monuments, nearly as perfect as the day they were built! And to pause a moment over a curious and exceptional development, and to go back in our chronology while we pick it up: What is there more fascinating than the much-abused latest Gothic; that which the French writers call a part of the Renaissance movement, as indeed it is, the strange and lovely work of the reigns of Charles VIII. and Louis XII. Admitting the charm of the English Fan Vaulting, in its three or four great examples, the late Gothic of Beauvais, of St. Riquier, of Rouen, of "The Church of Brou," of Abbeville, of Usson, and of the stalls of Amiens is of vastly greater importance. In the post-Renaissance days French art takes the lead again as it had done during the Gothic period. The architecture of Louis XII., Louis XIV., Louis XV. and Louis XVI. was nearly always the type and model for all Europe. And the remains of this latest epoch are abundant in proportion to their recent creation. It was not a time of very great vigor and of huge undertakings in building; royal palaces are about the only structures of exceptional size and cost, but of what was

built in those times France still preserves the greater part. On the whole, then, France is the land of the most numerous and valuable buildings. The great Revolution to the contrary notwithstanding, that territory where it is the pleasantest and easiest to travel of all Europe is also the most thickly set with monuments of architectural fine art, upstanding, intact, roofed and windowed, doing the work they were made for; too often marred by the restorer, but unexpectedly often treated mercifully by him, and accessible to every student. Let no one think, because he knows the great cities that he knows architectural France; that is only to be known by the patient wanderer and the one who is willing to try the nooks and corners. The pleasure he will have by doing it makes him the less to be pitied, and makes of his "patience" an agreeable receptivity; but that fact does not diminish the good it will do him.

Now, of all this wealth of ancient architecture a certain body of men, appointed at headquarters and armed with large powers, are the custodians. They form the Historical Monuments Commission, and their position is advisory to the Minister of Fine Arts. In these matters the minister of fine arts has great power, and the law of 1887 arms him with special and accurately-defined duties in the matter of the classification and preservation of ancient buildings. Then, too, it is almost wholly in the power of the Commission to decide whether a dolmen, a fragment of a Roman bath, a round-arched doorway built into a later wall, or a Gothic Church or Renaissance timber house, in full utility and beauty, is or is not a structure to which the State has a predominant right of control. Sometimes this control, when it is to be asserted, is obtained by expropriation and subsequent State ownership, sometimes by less stringent measures, in the cases where private property has been designated as worthy of being classed as "a historical monument." In the case of the churches, and many of the more important civic structures, the State was already owner, at least in every sense of custodianship.

The long list of these buildings, parts of buildings, ruins and "megalithic" monuments does not include all the structures in France which it is well for the student to visit, but it does include the more important ones. The list of them, even before the war of 1870, was long; a few were lost with Alsace and Lorraine, but others have been added. The whole list, as it was in 1887, can be got, appended to the act of that year confirming and modifying the law. It is very improbable that many names have been added to it during the past six years. And, as it stands, in spite of some anomalies and odd omissions for which perhaps there are reasons sufficient, it is the most remarkable roll of architectural efforts, experiments and triumphs anywhere to be found.

This Commission, having existed in one form or another for over half a century now, may be thought to have done comparatively little in the way of publishing some record of the treasure put into its charge. There is its one publication in book form, four volumes in folio, of the *Archives de la Commission de Monuments Historiques*, a work which was published after the Franco-Prussian war, but on lines determined by the Imperial authorities. This fine collection contains plates and some slight accompanying text descriptive of forty-three monuments ranging from the amphitheatre of Arles to the Chateau of Blois, in chronological order, and from these to the 30-foot chapel of Saint Gabriel, near Avignon, in order of importance. One of the special features of the work is Viollet-le-Duc's monograph on the fortifications of Carcassonne, plans, elevations and details, a worthy specimen of the elaborate fortification of the thirteenth century, grafted on and carrying out a much earlier system, begun in Gallo-Roman or in "Visigothic" times. The plates devoted to Blois are also of singular value; for here a record is preserved of what the Chateau was before M. Duban began his extensive restorations; restorations not unintelligent, not unwarranted if it be admitted that every old building is to be put into and kept in as a spick-and-span condition of complete repair; but still involving

a destruction of some old work which is to be regretted, and of which a record needed to be kept. The general preface to this work speaks of the "great number of remarkable drawings" which even in those early days were available and from which a selection was made for the plates of these four volumes. These drawings had been made by order of the Commission, and in each instance, for the purpose of laying before the minister the condition of the monument, assumed to need some outlay for repairs, care or restoration. The purpose of these drawings of the structure in its actual state being, then, accurate rendering and nothing more; and the drawings showing the restored or repaired structure being those of the architect in charge of the work, we have a considerable assurance of accuracy, and trustworthy guidance. A good book! But during the twenty years that have elapsed since these volumes were completed, no more of it has appeared, although the drawings in the hands of or available to the Commission have increased in number enormously. Those who have seen a selection of them in Paris will know how greatly it is to be desired that a farther publication should be made of these important documents.

Instead of that, however, the attention of the Commission has been turned to photography, and a huge collection of negatives has been made, fine prints of which are for sale to whomsoever will buy. Each print bears the prettily designed seal of the Commission, and also the words *Robert-Mieusement, Éditeur, Paris*. Many of them bear the date of the making of the negative; an excellent precaution.

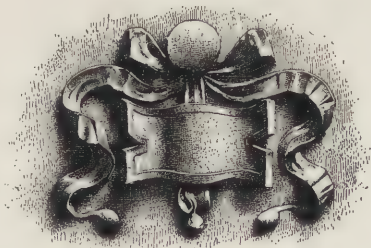
The most out-of-the-way corners of Brittany, the most forgotten villages off the lines of railway contain their share of the important monuments of France. These are not costly churches or big castles, but they are what is rarer still; as an old spelling-book is more scarce, when you want it, than a first-folio Shakespeare, because not set such store by in its time. It is they which have the mediæval church-yard "cross;" often a structure like a tower, and sometimes taking the form

of a *lanterne-des-Morts*, for which see Viollet-le-Duc's dictionary, *sub voce*. They have the "Calvary," if their luck is to be seated in Brittany. They have the ruined ante-Gothic Church, ruined but preserving its doorway and part of its nave in almost perfect repair and its sculpture in almost its original condition, like that at Aiguesvives, a place in the "Garden of France," and not so far from Tours itself, but not likely to be thought of by the traveler who flashes by on the railroad five miles off. They have the strange fortified church of the South, Les Saintes Maries, for instance, with battlements for warlike use, and not the pierced and foliated gimcracks of a late Gothic school at its wits' ends for ornament. These little villages and country-side nooks are sometimes, too, the homes of the real marvels of art, they having indeed grown up to such small development as they have reached around the votive church or the monastery, which some vision or some more earthly reasons of convenience had placed there. Such are the splendid late Gothic Church of Avioth, with 350 people living around it, afar on the Belgian frontier, near no place of greater importance than little Montmédy, and not very near to that; and the still more strangely contrasting village called *Notre Dame de l'Epine*, where the huge church, bigger and more elaborate than many a

cathedral, lifts itself out of a lonely plain, where indeed a few cottagers struggle along the roadside, but no ancient, compact, self-contained village has ever grown up.

Such is the game which he who loves ancient buildings will be put on the track of by the photographs of the Historical Monuments Commission. That it is not complete yet, that many a monument has been photographed in two aspects which needs a dozen views more, that many another has furnished only some general views which should afford a hundred details, is as true as that what has been done is good. Why, Mr. Organia's work on St. Mark's, of Venice, includes 450 photogravures of its details, and is it to be presumed that the Cathedrals of Chartres, Bourges, Reims, Amiens, offer less material? Either one of those great churches calls for photographs by the score, but these the local operator or the traveling student himself must take. Mr. Trompette, before his death, had taken 250 views of the cathedral of his own town. The collection before us is the most perfect guide possible to imagine to the architectural riches of France; little by little it will be increased, no doubt, but in the meantime its splendid record of great art of many periods is as accessible to foreigners as to Frenchmen for a study which will surely not exhaust its resources any too soon.

Russell Sturgis.





A HISTORY OF OLD COLONIAL ARCHITECTURE.



FOR most practical purposes the colonial architecture of the United States may be described as a reproduction, with such means and skill as the builders could command, of the English architecture of the eighteenth century. It outlasted the condition of political dependence by quite half a century. Indeed, such building in the United States as was architectural at all remained in effect colonial during the first quarter of the nineteenth century, and until it was displaced by the Greek revival. "The colonies," as they were up to the time when they ceased to be colonies, comprised only the Atlantic slope of the Appalachian chain, a strip of sea-coast varying from forty to two hundred miles in width, and extending from the boundary of Canada, then merely a geographical expression, to the boundary of the Spanish settlements, or rather of the Spanish claims, in Florida, which was hardly even a

geographical expression. Only where the mountains declined, as in the neighborhood of New York, were the settlements extended westward. Between Portsmouth on the north and Charleston on the south, and east of the mountains, was included all that there was of what is properly colonial building.

In spite of the diversity of the sources from which the coast was settled, the building became uniformly English as soon as it became so durable or ambitious as to take on the character of architecture. There are relics of Swedish building in Pennsylvania, and relics of Dutch building in New York and New Jersey. But neither what we can see of the relics of New Sweden and New Netherland, nor what we can learn of the state of things of which they are relics, suffices to invalidate the statement that so soon as the building of the colonies began to be architectural it began to be English. When the final transfer of New York to the British was made, in 1664, it is probable that three hundred buildings were as

many as were surrendered, and there is no evidence that the most pretentious of these fairly represented the state of architecture in Holland, where the Flemish Renaissance, to which a resort has been had within the past twenty years by architects, especially by British architects, in search of a style, was then in its most flourishing condition. The old market of Haarlem, the design of which has lately been adapted with much ingenuity and cleverness to the uses of a New York church of Dutch origin, and which is perhaps the most characteristic product of the Dutch Renaissance dates from about 1580. The small farmers and small traders who formed the Dutch community had built only to fulfill their immediate necessities, and timber as most available for the quick provision of shelter was the main material. The relics of Dutch architecture now extant in New York and New Jersey owe their preservation, of course, to the more durable character of the structure, which is mainly of rough masonry, with a sparing use of brick, as the more precious material. The Holland bricks seem to have been preferred to the English, so long as bricks continued to be imported, that is to say, nearly or quite to the end of the colonial period, though bricks were made along the North River very much earlier. They were made, however, of Dutch shapes and sizes, and it is questionable whether in many cases it was not the shape and size of "Holland bricks," that gave rise to the tradition that bricks had been imported from Holland which were in fact of American manufacture.

Albany, it is true, continued to be a Dutch settlement for some time after it had been renamed from Fort Orange, and after New York had ceased to be so. But as soon as permanent buildings, such as churches, began to be erected, even in Fort Orange the English taste had come to prevail there also. A meeting-house was indeed one of the first requisites in the Middle Colonies as well as in New England, but there is little evidence that before the beginning of the eighteenth century it had any pretensions superior to

the dwellings, except what it derived from its greater size. The meeting-house of the pioneers, often a place of refuge from Indian attacks, had the twofold character of the ancient building of the British border, which was

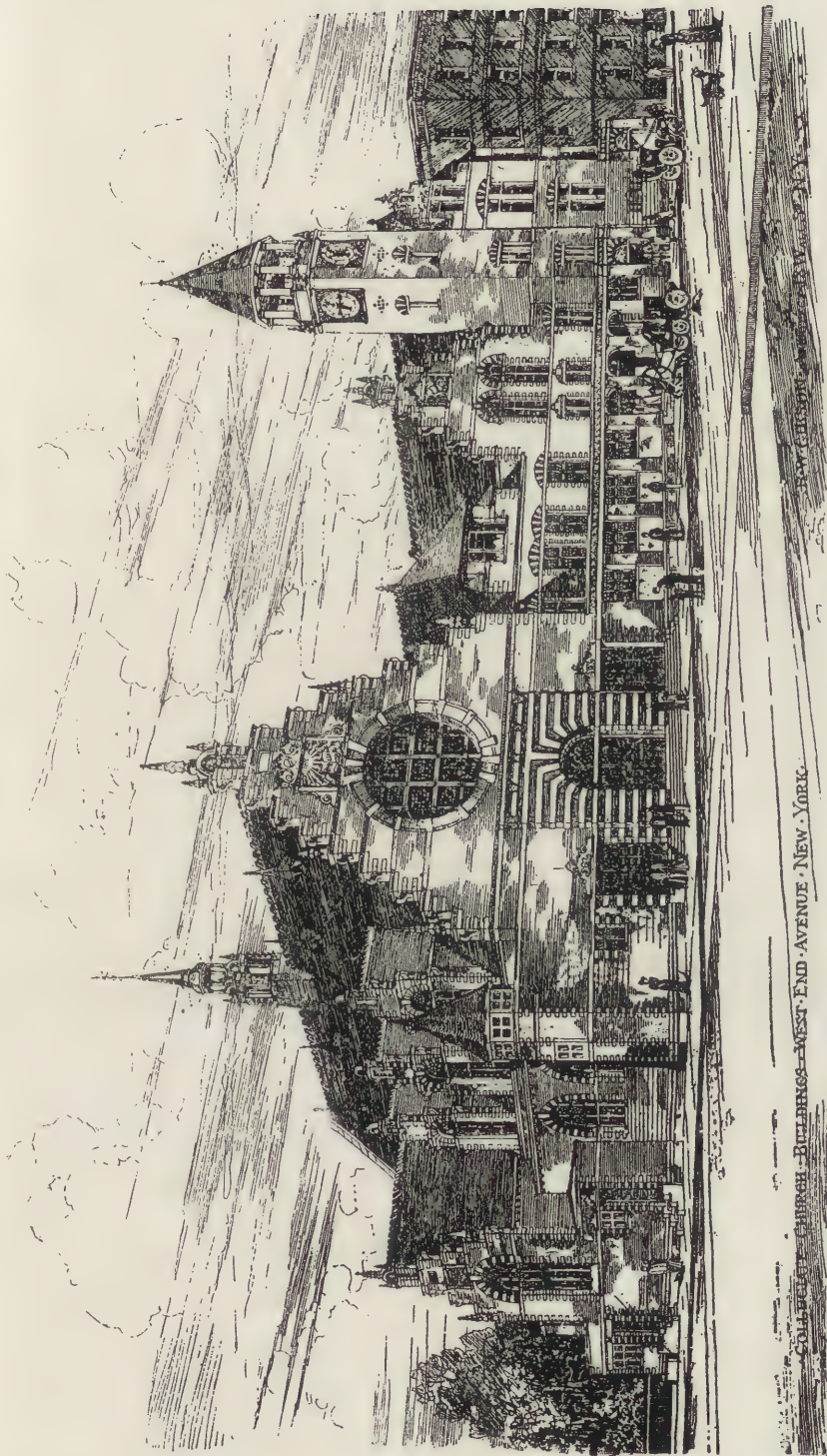
Half church of God, half tower against the Scot.

This was the case with the meeting-house of logs that was built by the Swedish colonists as the Delaware, in 1677, and that was succeeded by the "Old Swedes Church," built in 1700, and still standing. The plan of this edifice is evidently conformed to its requirements, without much thought of appearance. In execution it is a very workmanlike example of brick-work, but the detail proves, as clearly as the uncouth general form, that nothing but utility was in the mind of its builders. The little belfry that bestrides the roof is obviously an addition of a much later date than the body of the building, and this may be said with almost equal confidence of the decorated doorways of cut stone, which are insertions of a date that must be very considerable later than the beginning of the eighteenth century.

There is one church still remaining which is indisputedly much older than the Old Swedes', and to which tradition assigns a date so very much older as to stagger credulity. This is St. Luke's, in Newport parish, the old brick church, near Smithfield, Virginia, still standing and lately restored to habitableness, though its congregation has long since migrated and left its site more solitary than it was two centuries ago. The date assigned to it is 1632, and has little else than tradition to support it, the most palpable form of the tradition being that a Virginian, who was born in 1777 and died in 1841, was employed in 1795 in the office of the clerk of Isle of Wight county, and remembered seeing in the parochial records of 1632 frequent references to the building of this church, then in progress. The records, themselves, were long ago made illegible by decay and have disappeared. Whoever compares this date and this church with



OLD MEAT MARKET, HAARLEM.



COLLINGWOOD CHURCH - BILLINGS - WEST END AVENUE - NEW YORK.

what is otherwise known of the condition of the plantations in 1632 will find it extremely difficult to accept the date. The two natural questions, "where did the money come from," and "where did the workmen come from," are hard to answer. It is true that Raleigh had, in 1588, begun the work of evangelizing the New World by giving £100 "for propagating Christianity in Virginia," and in 1619 and the following years, under the instigation of King James and the Archbishop of Canterbury, who was himself one of the "Adventurers" of the Virginia company, the subscriptions for a "university" in the colony amounted to £1,500. A minister had attended the first ship load of colonists in 1606, and the Church of England was as much concerned about the religious welfare of the colony as the Independents and Presbyterians afterwards became about the spiritual state of New England. That there was a church building upon or near the site of the existing edifice in 1632, or even earlier, is probable. What is extremely difficult to believe without more convincing evidence than that which has satisfied the two historians of the Episcopal Church at Virginia, is that a church so monumental as to have lasted in its essential parts for two centuries and a half should have been within the pecuniary and mechanical means of the colonists in 1632, only a quarter of a century after the first settlement at Jamestown, twenty years after the baptism of Pocahontas, eight years after the patent of the Virginia Company had been revoked and the colony made a royal province, twelve years after the massacre which had destroyed Jamestown and for the time checked all missionary enterprise. It was not until 1633 that George Herbert's couplet was published, paraphrased in smoother verse a century later by Bishop Berkeley :

Religion stands on tiptoe in our land
Ready to pass to the American strand.

It was not until 1701 that was founded the Society for the Propagation of the Gospel in Foreign Parts, which,

indeed, never extended its labors to Virginia, but had a marked influence in the church building of the Middle Colonies. Even in 1655 there were but ten ministers in all Virginia. It seems, therefore, that a date nearly half a century later than that assigned by tradition is necessary to prevent this interesting building from being an entirely anomalous exception to all that we know of the state of society in Virginia or in America in 1632. A duration of two centuries still leaves it a venerable object, as American antiquity goes, and justifies the claim that local pride makes on its behalf of "the oldest Protestant church in the Western Hemisphere," and it may easily be the oldest building within the limits of the English colonies in America. The more credible supposition as to its age detracts no more from the architectural than from the historical interest of the building. Architecturally, indeed, the building might easily enough be referable to the date which tradition assigns to it. The body of the church is a parallelogram of fifty feet by thirty, and the adjoining tower eighteen feet square by about fifty feet high. A drawing made about forty years ago represents the tower as covered by a plain low pyramidal roof, but this was very likely more recent than the building. Whether the church was built in 1632 or much later it is probable that workmen as well as materials were imported expressly for its building, for there was scarcely permanent employment for such a body of bricklayers in Virginia at any time during the seventeenth century. Nearly a hundred years later (1781) Jefferson deplotes "the unhappy prejudice" of the Virginians "that houses of brick or stone are less wholesome than those of wood," adding that as the duration of wooden buildings "is highly estimated at fifty years, every half century our country becomes a *tabula rasa*." This earliest of Virginian monuments is an excellent piece of brick-work that owes its duration to good workmanship and to the quality as well as the quantity of material in its thick walls. It is quite clear that it was not designed by



CATHEDRAL AT SALTILLO, MEXICO.



ST. LUKE'S, NEWPORT PARISH, NEAR SMITHFIELD, VA.

A. D. 1632.



Philadelphia.

OLD SWEDES CHURCH.

A. D. 1700.

an architect, for it has no badge of the Jacobean or Caroline architecture except the appearance of the protruding keystone over the entrance, and the quoining at the angles of the tower, though, indeed, this latter is as old in English building as the so-called Anglo-Saxon period. The work is what might be expected from an English bricklayer of the seventeenth century reproducing from memory, and in the material available to him the form of a parish church of the old country. The Gothic tradition had died out and the reproduction was a reproduction of the forms alone. The arch, for example, in the second stage of the tower is not structurally an arch, for the joints are horizontal, and it owes its stability merely to the cohesion of the brick and mortar, though the arch of the belfry stage is a true arch, a ring of half a brick in thickness. The buttresses, it is probable from their form, were useless appendages, such as the nineteenth-century architect frequently applies to denote that his building is Gothic. It is possible, however, that they may have had reference to the original roof construction, and possessed a mechanical function with relation to it, though this cannot be determined, as the church was re-roofed "some twenty or thirty years" before 1857, when Bishop Meade described it.

Whatever its precise date may be, St. Luke's, at Newport, is probably, with two exceptions, and these barely exceptions, the only colonial church of the seventeenth century still standing, and is eminently worthy of the pious pains that have lately been taken to restore it. The oldest churches in the Middle Colonies, antedating by a year the oldest in Philadelphia are the Dutch church at Sleepy Hollow and the Swedish church at Wilmington, Del. The former is a parallelogram of rude masonry, the windows framed in yellow bricks that were undoubtedly imported. It has an apsidal end, as in Philadelphia, but with the gable of wood, bearing a wooden belfry, very artlessly designed and attached to the roof, which is quite rude enough to be the

reproduction of that set upon the original building of Philipse. The church at Wilmington, equally rude in construction, is distinctly better in design, and the lateral porch is a positively picturesque feature. The Old Swedes', as we have seen, was built just at the close of that century. Early in the following century Philadelphia took, in population and wealth, the lead among American cities, which it held throughout the colonial and revolutionary periods and did not lose until the end of the first quarter of the present century. In churches and in public buildings the relics of the colonial period are much more extensive and interesting than those of any other American town, and perhaps than those of all other American towns. The plainness of the domestic and the commercial building during this period, so violently in contrast with the now current Philadelphia mode in these departments, is in part referable to Quakerish simplicity and in part to the preference for brick which came from the natural facilities of the place for brickmaking, and the early advantage that was taken of them, in so much that "Philadelphia bricks" acquired, during the eighteenth century, a pre-eminence that they retained until within the last twenty years. It is not without significance that the most elaborate and pretentious of the early buildings of Philadelphia should have been that of the Church of England. The present edifice succeeded a previous church, also in brick, which was older than the existing Swedes' Church, having been built in 1695, and no doubt resembled it in design. It rejoiced, however, like so many colonial churches in the Middle Colonies, in a communion service given to it by Queen Anne. At the time of its erection (1727-1731) Christ Church was not only by far the finest building in the colonies, but in relation to the wealth of the community was a more impressive testimonial of public interest in its purpose than any religious edifice erected since. There was at that time and for long afterwards no such person as a professional architect in the colonies. The me-

chanics were intrusted with the design as well as the execution of utilitarian buildings, while for civic or religious monuments the designs were either imported or intrusted to amateurs, who dabbled in Vitruvius and had some knowledge of the current modes of the old country. A physician of Philadelphia, Dr. John Kearsley, was the amateur who was invoked to design Christ Church. It is not clear whether the steeple, as it now stands, was part of his original composition, for it was not finished until 1754, twenty years after the completion of the church. It is less successful in design than the body of the church to which it is attached. Though the modeling of the octagon is very well considered as a design for a substructure of a spire in masonry, it loses most of its effect when rendered in evident woodwork, and the spire itself, which is carried to the height of 196 feet 9 inches, is not happy in outline or proportion. Upon the body of the church one is inclined to congratulate the shade of the amateur designer, considering the difficulties under which he labored. He had at command excellent brick and excellent bricklayers, but the task of making an architectural building out of bricks alone was one which he not only forebore to attempt, but which doubtless never occurred to him as feasible. To him, as to his professional contemporaries in the old country, architecture was a matter of "the orders," and to make a work of architecture out of a building was to apply the orders to it with accuracy and discretion. Unfortunately the exterior application of the orders involved the employment of large masses of stone and of skilled stonecutters, and skilled stonecutters in sufficient numbers were not to be had in the colonies at that time. Hence it was necessary to imitate the orders in brick, or in wood, the latter process being objectionable from its lack of durability, and the former from its mean and petty appearance, even to those who did not at all connect the forms of the orders with the construction that gave rise to them. The lack of stonecutters in colonial Philadelphia during the colo-

nial period is made evident by the use, in the dwellings of the humble class that remain from that period, of sills and lintels of wood in brick walls, thus limiting the duration of the building to that of the more perishable material. In Christ Church it is made evident by the construction in brick of members which could not have been devised for the material, as the pilasters of the walls and of the chancel-window and the entablature of this window. The exterior is, however, a reasonably frank and straightforward exposition of the interior arrangement—a galleried room, 75 feet long by 61 wide and 47 high, with a chancel 15 feet by 24. The interior was designed with accurate knowledge of what was done in England, and shows the system, adopted by Wren and his successors, of an order completed by the insertion between the column and the impost of the arch of an ugly and irrelevant fragment of entablature. That the detail here is more correct than that of the exterior is doubtless due to the fact that the amateur architect was here assisted in his design by the mechanics who were to execute it. Indeed, it is noticeable throughout the whole colonial period, at least the politically colonial period, that the carpenters were much better trained than the stonecutters, and that the woodwork habitually betrays the result of this superior training, being at once more correct in design and very much more accurate in detail than the stonework in the comparatively few instances in which classic detail was attempted in stone. Neither at the time of its erection nor long afterwards, did Christ Church, Philadelphia, have any rivals to the northward. There is not a church left standing in New York within thirty years as old, nor were there any of which there is any reason, on architectural grounds, to lament the disappearance. The Old South Church in Boston, was contemporaneous with Christ Church, having been begun in 1729, but the interest of this is exclusively historical. Indeed, considering that the plan of the two edifices is virtually the same, and their dimensions not very far apart, the Philadelphian



Philadelphia

CHRIST CHURCH

A D 1727-31.



Philadelphia.

INTERIOR CHRIST CHURCH.

Restored 1882.

relic attests the clear superiority in the polite arts of Philadelphia over Boston. It has in the comparison a distinct air of "gentility," to revive the eighteenth century word, while the Bostonian church, otherwise merely uncouth and ugly, derives a taint of vulgarity from its unsuccessfully pretentious spire. It is true that, while there is no reason to doubt that the Old South was fairly representative of the Boston of 1729, Christ Church may make an unduly favorable showing for the Philadelphia of that time. The next Philadelphia church to it in antiquity, St. Peter's, is thirty years younger (1758) and distinctly inferior, lacking, indeed, all the features that give distinction to the older building, except a chancel window correctly designed and detailed in wood, but deprived of its effect by the juxtaposition of other windows in a relation that seems entirely fortuitous. The steeple is positively ugly, the tower being a shaft of brick work pierced with openings without architectural relation to itself or to each other; and the spindling cone of the spire is abruptly and awkwardly set upon this, without any such attempt to soften the transition as the polygonal base that is the most successful feature in the design of Christ Church, and that needs only execution in monumental material to be a really monumental feature.

Within a few years, however, Christ Church had an architectural rival in the English colonies, and the rival was then esteemed to have the better of the competition. This was St. Philip's, in Charleston, said to have been completed in 1733. It is to this undoubtedly that Burke refers in the description of Charleston, contained in his "Account of the European Settlement in America (1757)." "The church is spacious and executed in a very handsome taste, exceeding everything of that kind which we have in America." Though Charleston was at a much earlier date divided into the parishes of St. Philip's and St. Michael's, and though the existing church of St. Michael's was begun in 1752, it was not opened for service until February, 1761. St. Philip's was burned in 1835, but in the rebuild-

ing the old church was reproduced, except that the spire was made taller, and now, but for the damage done to it by the earthquake of 1885, it still corresponds to the quaint account of its predecessor in "A Short Description of the Province of South Carolina" (London, 1763).

St. Philip's Church is one of the handsomest buildings in America. It is of brick, plastered and well enlightened on the inside. The roof is arched, except over the galleries (nave tunnel-vaulted), two rows of Tuscan pillars support the galleries and arch (vault) that extends over the body of the church, the pillars ornamented on the inside with fluted Corinthian pilasters, whose capitals are as high as the cherubins over the centre of each arch, supporting their proper cornice. The west end of the church is adorned with four Tuscan columns, supporting a double pediment, which has an agreeable effect; the two side-doors, which enter into the belfry, are ornamented with round columns of the same order, which support angular pediments that project a considerable way and give the church some resemblance of a cross. Pilasters of the same order with the columns are continued round the body of the church; over the double pediment is a gallery with bannisters; from this the steeple rises octagonal (*sic*) with windows to each face of the second course, ornamented with Doric pilasters, whose intabature supports a balustrade: from this the tower still rises octagonal with sashed windows in every other face, till it is terminated by a dome, upon which stands a lanthorn for the bells, and from which rises a vane in the form of a cock.

The nave of St. Philip's is 74 feet long, the vestibule 37 and the portico 12, making the total exterior length 123 feet. The greatest width is 62. It would seem to have been inevitable that when the parishioners of St. Michael's came to build, they should strive to outdo their neighbors in dimensions as well as in "elegance." The extreme length of their church is 130 feet, the body 80 feet, and the steeple is 192 feet high, but the extreme width, 58 feet, is 4 feet less than that of the older church. The description of it from the same authority just cited, may serve to supplement, if not to elucidate the illustration.

St. Michael's Church is built of brick; it is not yet quite finished. It consists of a body of regular shape, and a lofty and well-proportioned steeple, formed of a tower and



Charleston, S. C.

ST. MICHAEL'S CHURCH.

A. D. 1752-61.



Near Charleston, S. C.

GOOSE CREEK CHURCH,

Circa A. D. 1715.

spire; the tower is square from the ground, and in this form rises to a considerable height. The principal decoration of the lower part is a handsome portico with Doric (Roman-Doric) columns, supporting a large angular pediment, with modillion cornice; over this rise two square rustic courses; in the lower are small round windows on the north and south; in the other, small square ones on the east and west (on all four). From this the steeple rises octangular, having windows on each face, with Doric pilasters between each (*sic*), whose cornice supports a balustrade; the next course is likewise octagonal, has sashed windows and festoons alternately (festoons no longer, perhaps removed when the clock-faces were inserted) on each face, with pilasters and a cornice, upon which rises a circular range of Corinthian pillars, with a balustrade connecting them, from whence is a beautiful and extensive prospect. The body of the steeple is carried up octangular within the pillars, on whose entablature the spire rises, and is terminated by a gilt globe from which rises a vane in the form of a dragon.

One is not surprised to learn from another source that the steeple of St. Michael's was, during the whole colonial period, the chief landmark of the low Carolinian coast to incoming mariners, and it served the same purpose a century later for Confederate blockade runners. Of the architect of St. Philip's no tradition remains, though it is probable that the plans for it were procured in England. It does not betray, as even Christ Church in Philadelphia betrays, the hand of the amateur. It is certainly known that the design of St. Michael's was imported, and the *South Carolina Gazette*, of February 22, 1752, in describing the projected church, informs its readers that it was to be erected "from Mr. Gibson's designs." There is no architect of the period known by this name to fame, or even to tradition. But the most fashionable church architect in London in 1752, to whom the agent of the colonial church would naturally apply, was James Gibbs, who died in 1754, the designer of the Radcliffe Library at Oxford, and of the church of St. Martin's-in-the-Fields in London—then the most admired church since Wren's time. It is not at all unlikely that it was he who designed St. Michael's which certainly is worthy of him, or of any designer of the time. There are several examples in colonial

architecture of the conjunction, introduced by Hawksmoor a generation before and employed by Gibbs of a classic portico with a steeple modelled upon the steeples of Sir Christopher Wren. The conjunction is unfortunate in that it involves the standing of the spire on the roof, to keep it out of competition with the portico, and prevents its lines from being brought down to the visible support of the ground. This has been avoided in St. Paul's church in New York, by putting the steeple at one end of the church and the portico at the other, which is upon the whole a more eligible arrangement than that oftenest adopted in England and employed in St. Michael's, and in subsequent American churches; but the conjunction has seldom been better managed than in the present instance. St. Michael's is one of the most valuable remains of colonial times, a massive and dignified structure. If there were no other relic of those times in Charleston, we might still agree with the local historian who wrote in 1854, that in his youth "all our best buildings, public and private, were of provincial date," and apprehend that the saying might be repeated in 1894.

There is near Charleston a curious and interesting church which, in a chronological order, should have preceded the churches last described. This is St. James', at Goosecreek, on the Cooper River, which must have been finished before 1731, for in the "Descriptions of South Carolina, for Protestant Immigrants," published in that year, it is recorded that soon after 1706 "the church they first built became too small for the growing number of parishioners, and they erected a beautiful brick edifice." The brick is plastered, and the angles are quoined in stone. The general aspect of the building, exceptionally well preserved as it is, is not only antique but foreign. Except that its architecture is distinctly of the Renaissance, it has no architectural affinity with the churches of Charleston, or with any of the churches of the English settlements further to the north. On the other hand it has distinct affinities with the Spanish Renaissance, as that

was practiced in Mexico at an earlier date, and in Louisiana and Florida at a later. Its existence is explained by reference to the Spanish Settlements in the South, and to the indeterminate boundary between Florida and South Carolina, which was so often the cause of bloody affrays, but which in this instance seems to have resulted in an exchange of the arts of peace. A comparison of it with what is called the "Cathedral" of St. Augustine, though,

church at St. Augustine. The difference in date goes to prove an identity of origin by excluding the notion of a direct imitation; for, whereas the Carolinian church, as we have seen was finished before 1731, the Floridian church was built in 1793, under the supervision of two Spanish engineers, although Florida had been ceded to Great Britain in 1763.

There are few other interesting churches of the colonial period in the



CATHEDRAL OF ST. AUGUSTINE (1793).

in fact, it was built for a parish church, indicates that the design was furnished by a Spaniard, even if the work was not executed by Spanish craftsmen. It is quite plain that the unsightly hipped roof was not meant to be seen, and that the front was not completed. What exists indicates not less clearly that it would have been most naturally completed, and the design carried out by the superstructure of a false gable, such as that which covers the front of the

Southern States. In Virginia the earliest church of all is very nearly the best, having a simplicity and repose with its homeliness that are lacking to the more pretentious and not more skilful builders of a later day, and that come near to constituting an artistic quality. The New England meeting house of the eighteenth century, of which we have considered one of the most conspicuous examples, is entirely devoid of architectural interest or architect-



Philadelphia.

ST. PETER'S CHURCH.

A. D. 1758.



C. H. ISRAELS
JUNE - 1898.

THE
SPIRE OF ST. PAUL'S N.Y.



ZION CHURCH, PHILADELPHIA.



A. D. 1802.

OLD ST. PETER'S CHURCH, ALBANY, N. Y.

Philip Hooker, Architect.

ural purpose. The most bigoted praiser of time past has not ventured to suggest the vernacular New England meeting house as a promising point of departure in ecclesiastical architecture. In the middle colonies, however, there are many churches in which the type ultimately derived from the work of Sir Christopher Wren, has undergone local modifications that tend to render it national. This is the church of rough stone with quoins of hewn stones at the angles and the openings, with a tower slightly projected from the front, carrying a spire with several stages of classic detail, comprising one or more orders, of

which St. Peter's, Albany, 1802, is a favorable but not too favorable example; a seemly and not uncomely edifice. Of St. Paul's, in New York, Major Charles Pierre L'Enfant, afterwards the planner of Washington, was, at the time he was employed in altering the City Hall, described as the architect. But this is clearly out of the question, for the body of the church was built in 1764-66, and L'Enfant came out with D'Estaing only in 1777. What he did was very likely to add the east front, including the portico—not the spire which was erected within this century. The portico consists of four Ionic columns, the capitals of which those in the

City Hall resemble closely enough to have been imitated from them. At the centre they are so widely spaced, apparently to afford a full view of the chancel window, as not only to exceed classical precedent, but to threaten the integrity of the entablature if that had been actually of masonry. As a matter of fact it is of wood, the columns being of brick covered with stucco, painted to imitate brown sandstone. A very

In the order of development of the colonies civic buildings came after churches, and down to the middle of the eighteenth century were upon the whole inferior to them in size, costliness and architectural pretensions. In point of time, New York took the lead in the erection of a durable municipal monument. It was in 1700 that the City Hall was erected at the head of Broad street, which was to serve its



A. D. 1731-1735

INDEPENDENCE HALL, PHILADELPHIA.

James Hamilton, Architect.

good example of the type exemplified by St. Michael's at Charleston, in which the portico and the steeple are combined, is St. John's Church in New York, 1803-07, of which the architect was John McComb, the superintending architect and putative designer of the New York City Hall. In construction this is more substantial and genuine than St. Paul's, the columns, with their bases and Corinthian capitals being of cut stone, though ere also the entablature is of wood.

purpose for more than a century, or until the completion of the existing City Hall in 1811, excepting the brief interval during which, in an embellished state, and under the name of Federal Hall, it served as the capitol of the United States, an interval commemorated by the statue of Washington at the scene of his first inauguration as President. It was at the instigation of Lord Bellomont, Governor of the Province, that the project

was undertaken in 1698, in which year the plans of "James Evetts, architect," but doubtless in fact a mason, were adopted. The foundation was laid in 1699, and in the following year, as has been said, the building was occupied. The general scheme, of two wings and a recessed centre, about equal in extent to both, was much the same as that adopted for the building which superseded it, although the earlier building was on a much smaller scale, and of course far less elaborated. Indeed, the only attempt at decoration was in the brackets of the cornice, in the wooden lantern of the roof, in the balcony at the centre of the second story, and the coats-of-arms of the Governor (Bellomont) and the Lieutenant-Governor (Nanfan), emblazoned on stone tablets affixed to the front. In spite of its moderate dimensions, its humble material, which was apparently brick, with stone only in the sills and lintels, the binders which served as capitals to the square piers of the loggia and possibly the string course between the stories, the building was dignified and impressive by reason of the justness and, indeed, felicity of its proportions, and by its very absence of pretense. The cost was £3,000. When in 1789 it was decided to enlarge and improve the building for the occupancy of Congress \$32,000 was appropriated for the purpose, and the spending of it was intrusted to Major L'Enfant. His enlargement consisted in raising the roof so as to admit a low attic in place of the roof story lighted by dormers, of the original, and in an increase of height by the addition of an upper roof of somewhat lower pitch. The recessed centre was filled up with a wall in the plane of the wings, and from it a portico in two stories, and in Roman Doric was projected twelve feet. The frieze was divided so as to embrace thirteen metopes, in each of which was a star, and the centre of the pediment was dignified by a spread eagle. The alterations were much admired. John Page, who came to New York for the first session of Congress, as a representative from Virginia, writing home, after saying that "this town is not half so large as Philadelphia, nor in

any manner to be compared with it for beauty and elegance," and that he is "well assured Philadelphia has more inhabitants than New York and Boston together," goes on to say that "the college, St. Paul's Church, and the Hospital are elegant buildings. The Federal Hall also in which Congress is to sit is elegant." Thomas Twining, an English traveller who visited New York in 1793, found it the only building worth looking at, or at least worth mentioning.

The oldest of the secular public buildings of Philadelphia, more famous and memorable than that of New York whether as City or as Federal Hall, is fortunately still standing and in perfect preservation. It is the building which for more than a century has been known as Independence Hall, but which, for the first half-century of its existence, was the State House of Pennsylvania. It is almost exactly coeval with Christ Church (1731-1735), shows an equal skill in workmanship and the same method, the use of black glazed headers with red brick. In one point, at least, the free use of cut stone, the workmanship shows an advance, for tooled ashlar are employed in the quoining at the corners, in the panels and the string courses, while the keystones of the flat brick arches required an even higher degree of skill in stone-cutting. Of this also the architect was an amateur, a lawyer, James Hamilton by name, and his design was as successful for its purpose as that of the church. The dimensions of the building are 100 feet by 44, and they are made the most of by the emphasis added to the horizontal lines and the limitation of the whole front to a single plane, while the relation of the stories to each other and the interpolation of a third term in the paneled band inclosed between the string-courses, make up a well-proportioned composition and relieve the long front of monotony. The effect of length is enhanced and variety at the same time added by the judicious addition of the lower flanking buildings, the one the old City Hall of Philadelphia, the other Congress Hall, which furnished quarters for the executive officers during

the Revolution. The tower, though it has refinement of detail, is scarcely so fortunate as that of Christ Church either in its design or in its adjustment to the building which it crowns. Carpenters' Hall, the next most important secular relic of colonial times, is fifty years younger than the State House (1770), inferior to it in dimensions, and in spite of its pediments and its arches, so similar in design and workmanship as to show an extreme conservatism, which is the more remarkable by its contrast with the recently prevalent rage for innovation in Philadelphian building.

"The great commodiousness of navigation and the scarcity of handicraftsmen" were assigned by Burke, and no doubt rightly, as the causes which "have rendered all the attempts of the government to establish towns in Virginia ineffectual." When the planter had his own wharf on his own estate, from which he sent his produce directly to his agent in London or Bristol, and at which he received his supplies directly in return, he had no need of a market-town. The Virginian village was a "court-house;" the town was a capital. The peculiar situation of Virginia in this respect is worth consideration by the student of colonial society in general, as well as by the student of colonial architecture in particular, for it is intimately connected with the social and political history of the colony. Burke goes on to say that "Jamestown, which was anciently the capital, is dwindled into an insignificant village; and Williamsburg, though the capital at present (1757), is yet but a small town." "However," he adds, "in this town are the best public buildings in British America." In view of what we have just seen of Philadelphia at this time we must challenge the accuracy of Burke's information. It appears that he was misled by an extremely rosy view taken by Hugh Jones, A. M., in the "Present State of Virginia," 1723, which Burke paraphrases and almost repeats. The college of William and Mary is held by many Virginians, as an article of faith, to have been designed by Sir Christopher Wren, but this belief is overthrown by the very testimony on

which it is founded. It would be a grievous thing to ascribe the design of the actual building to Sir Christopher. Jones says: "The college of William and Mary is double and 136 feet long, having been first modeled by Sir Christopher Wren, adapted to the nature of the country by the gentlemen there, and, *since it was burnt down*, it has been rebuilt, nicely contrived, altered and adorned, by the ingenious direction of Governor Spotswood, and is not altogether unlike Chelsea Hospital." But it is not even the restoration of Spotswood that is now to be seen, for his work was also destroyed by fire, in 1746, to be replaced by the present building, of which the architectural origin is neither known nor important. The colonial capital has also disappeared, having been burned down in April, 1832. It confronted the college at the other end of what Burke calls "a noble street," and conformed to it in architecture; and the colonial church (1715) is still standing, although the interior has been altered. The capitol was built "at the cost of the late queen" before 1723, and Jones says "it is the best and most commodious pile of its kind I have seen or heard of." He adds: "The buildings here described are justly reputed the best in English America, and exceeded by few of their kind in England." One may reasonably suspect Jones of an ignorance of Philadelphia, as well as of an inordinate desire to please Governor Spotswood. A less rosy but more accurate view is given in Jefferson's "Notes on Virginia:"

"The only public buildings worthy of mention are the Capitol, the College, the Palace, and the Hospital for Lunatics, all of them in Williamsburg, heretofore the seat of our government. The Capitol is a light and airy structure, with a portico in front of two orders, the lower of which, being Doric, is tolerably just in its proportions and ornaments, save only that the intercolonations are too large. The upper is Ionic, much too small for that on which it is mounted, its ornaments not proper to the order, nor proportioned within themselves. It is crowned with a pediment, which is too high for its span. Yet, on the whole, it is the most pleasing piece of architecture we have. The College and the Hospital are rude, misshapen piles, which but that they have roofs would be taken for brick kins."

The tradition that Sir Christopher had something to do with the existing architecture of Williamsburg refuses to be altogether dislodged, and has alighted upon the Court House, which is the only remaining relic in Williamsburg, excepting the College, of colonial secular architecture. In a very recent publication it is ascribed to him, though it is quite evident that it had no architect except the colonial mechanic who

Burke says: "I shall be very concise in my account of Maryland which, agreeing with Virginia in its climate, soil, products, trade and genius of its inhabitants * * * will save much trouble in that article." But the capital, chartered in 1708, and named in honor of Princess Anne, not yet Queen, was, relatively to the population of the colony, if not absolutely, a more important place than the capital of Virginia, dur-



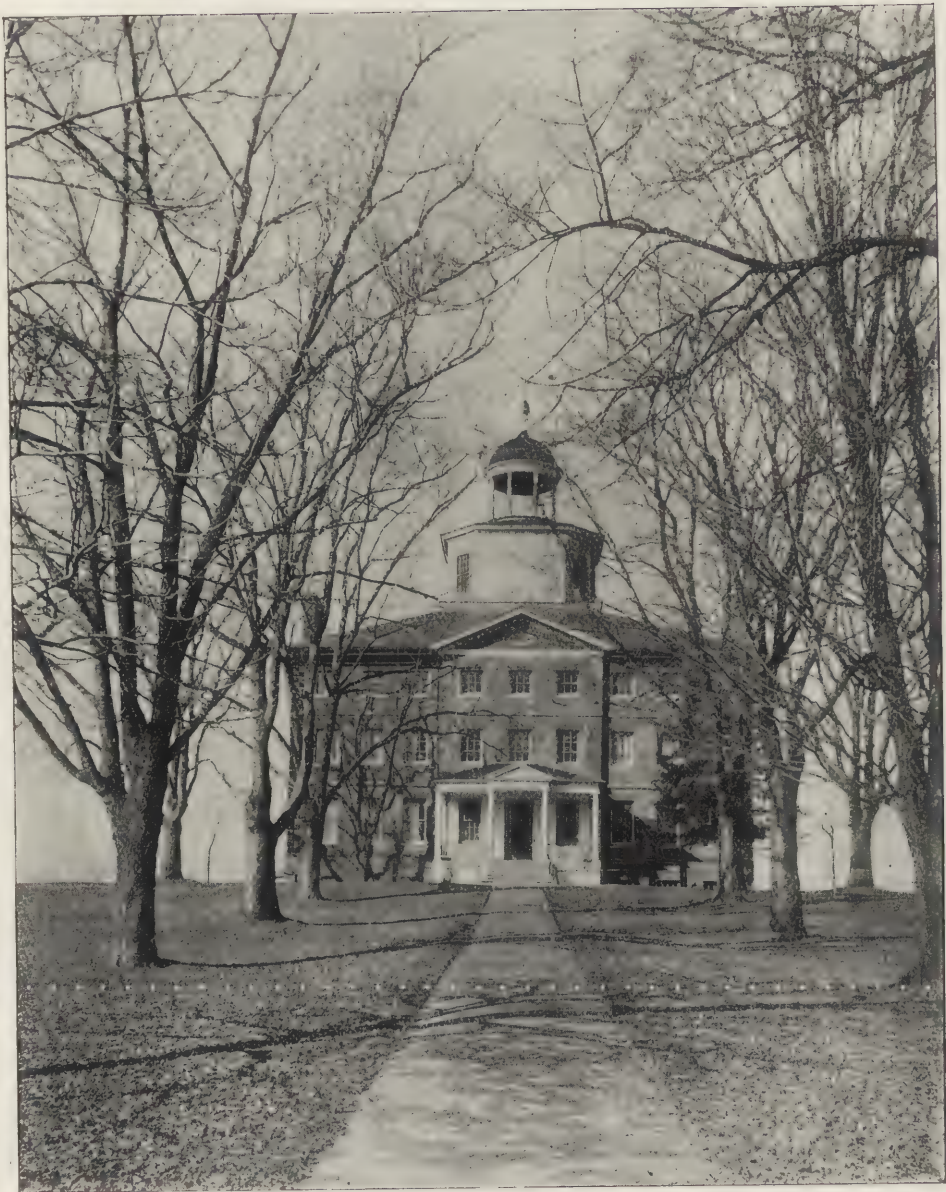
THE COURT HOUSE, WILLIAMSBURG, VA.

From Chandler's "The Old Colonial Architecture of Maryland, Pennsylvania and Virginia.

built it. A similar tradition retains its hold about the steeple of the oldest church in Providence, R. I., which is in another recent publication declared to be by Wren, although when the steeple was built, in 1775, the architect had been half a century in his grave.

After it was given over, like Virginia, to the culture of tobacco, Maryland became in most respects an extension of the Old Dominion, insomuch that

ing the colonial period. The commercial sceptre passed to Baltimore before the colonial period was completed, and commercial stagnation left Annapolis a relic of those times, insomuch that it is now, upon the whole, to a student of colonial architecture, the most interesting town in the United States, as retaining its ancient aspect least impaired. Its claims upon his attention were urged in Mr. Randall's interesting



Annapolis

ST. JOHN'S COLLEGE.





HOUSE OF DELEGATES, MARYLAND.

paper upon "Colonial Annapolis" in No. 3 of *THE ARCHITECTURAL RECORD*.

The earliest of the remaining public buildings of Annapolis is St. John's College, a seat of learning which was very probably established in emulation of the like institution at the capital of Virginia, and by a chief magistrate whom the laurels of Spottswood would not suffer to sleep. At any rate it was begun as early as 1744 through the importation by Governor Bladen of "a Mr. Duff, the architect, from Scotland." It was not completed, however, until 1785, after having become a bone of political contention, and long after it had come to be commonly known to the simple Marylander who had no yearnings for the higher education, as "the Governor's folly." There does not seem to be a complete justification in its interior aspect for the importation of its architect, since there is nothing beyond the reach of the home-bred bricklayer excepting the dome, which is certainly in execution and probably also in design a later addition to the work of Duff, and is an unfortunate erection in which the ambition of crowning the edifice with a wooden monument seems to have been accompanied by the utilitarian device of securing an additional apartment above the roof. The lack of stone-cutters is attested in this building by the extremely sparing use of cut stone, the single band of it across the foot of the gable, where it is most conspicuous, being almost the only instance of its employment.

The same economy is noticeable in the State House, which albeit of a considerably later date than the college, shows a close similarity in the workmanship of the exterior, while the rich and successful interior brings out anew the striking inferiority that is shown in all the pretentious buildings of the colonial period of the workers in stone to the workers in wood. The joiner-work in the State House is marked by a precision and delicacy which cannot be excelled, and leaves in its way nothing to be desired, while the design of the rotunda is worthy of so elaborate an execution, and worthy, indeed, of execution in a more durable material.

In 1769 the Legislature appropriated £7,500 for the building, of which Joseph Clarke was appointed the architect, and the corner-stone was laid in 1772, and the next year the building was roofed. The dome, however, is not to be ascribed to the original architect, at least it was not added until after the Revolution. Our admiration for his treatment of the interior must make us willing to relieve him of the responsibility for the cupola, in which, as in many more recent erections of the same kind, the ambition to attain a towering height—in this case the even height of 200 feet—led the architect to design a feature disproportionate to his substructure, and not only unduly to elongate the dome itself, but to add offensively superfluous stages to it. The diameter of the dome is 40 feet; the area of the building 120 by 82.

In Charleston the only secular public building remaining from the colonial period is the old Post-office, built as a merchant's exchange. It is manifest that its present aspect cannot represent its original state, which indeed is difficult to reconstruct from what is now to be seen. Like the neighboring church at Goosecreek, it is an anomaly in colonial architecture, since it can scarcely have been undertaken to reproduce in it the current forms of English building. It is not improbable that artisans from the Spanish settlements to the Southward were again employed in its building. The date of its erection increases the plausibility of a conjuncture suggested by its architecture, for the building of it was authorized by an act of Assembly in 1761, and it was in 1763 that Florida was ceded by Spain to Great Britain, in exchange for Havana.

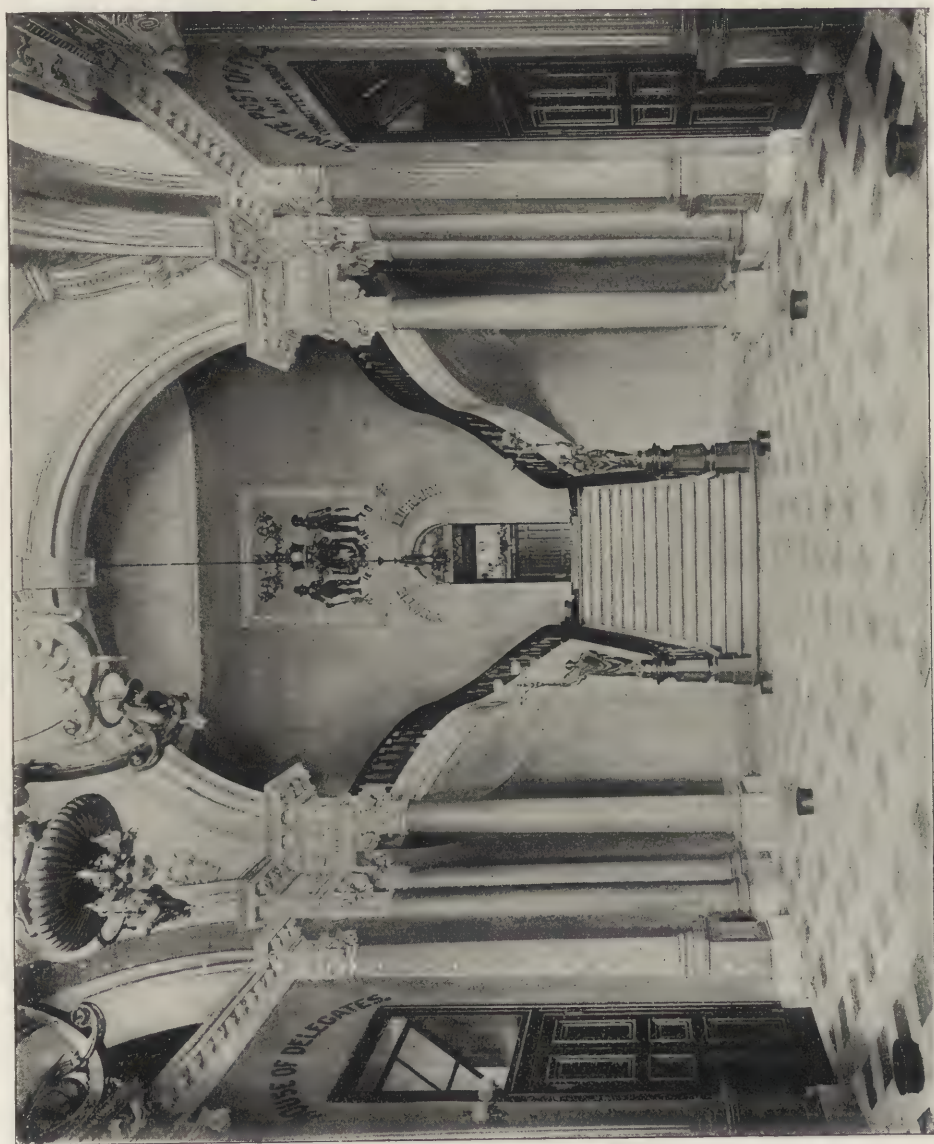
The one colonial public building of Newport that has been preserved and that is worth preserving is the Redwood Library. It was in 1747 that Abraham Redwood gave £500 for the establishment of the library that bears his name. Peter Harrison, the pupil of Vanbrugh, who was employed at the time in building King's Chapel in Boston, was chosen the architect of the library which was finished in 1750.



OLD POST OFFICE, CHARLESTON, S. C.



STATE HOUSE, BOSTON, MASS.



Annapolis,

ROTUNDA, STATE HOUSE,

The architecture is confined mainly to the Doric portico, of which the columns are 17 feet high and which is projected 9 feet from the face of the building. These two works of Harrison are noteworthy, as probably the only remaining buildings in New England erected before the Revolution from the designs of a professional architect. Neither the old State House nor Faneuil Hall in Boston now remains in its primitive condition. The former, erected in 1748, had originally its broken gable and tower, but the design of the roof has since been materially modified, and the latter was enlarged towards the close of the century under the direction of Bulfinch. But what remains of provincial Boston suffices to show its architectural inferiority to the seaports to the south of it.

A Bostonian, however, is memorable as the first educated American who devoted himself to the profession of architecture. Charles Bulfinch, born in Boston in 1763, was graduated at Harvard in 1781, and three years later spent a year in Europe. In 1793 he superintended the erection of the first theatre in Boston, the erection being in itself a relaxation of Puritanical severity that was of good augury for the progress of the polite arts. The design of the theatre, a scholarly front in two stories, with a tetrastyle portico and a pediment in the upper, survives only in the complimentary medal struck for Bulfinch by his employers. In 1795 he was appointed architect of the new State House of Massachusetts and for three years superintended its construction. At the time of its completion, excepting the Capitol at Washington, then in course of construction, it was the most monumental public building that had been projected in the United States, and its architecture deserved the celebrity which it obtained. In general composition it is very successful. The superstructure of two stories is sharply distinguished from the basement, while its subdivision suffices to relieve it of monotony without compromising its unity. The flatness of the wings, the want of visible depth in the walls, and the want of emphasis in the

subdivision and the detail are distinctly defects of colonial work. The treatment of the centre, however, is as distinctly an innovation, and shows that the architect had studied continental as well as English Renaissance. For the first time in America, the order is superposed upon an arcade, after the manner introduced by Mansard at Versailles, and afterwards employed by Latrobe in the Capitol of the United States and repeated in the extension by Walter, the columns of the order are properly doubled at the ends, and the pediment is withdrawn from the order, to appear above it on the substructure of the cupola. The adjustment of the cupola to its base, always a difficult point of design, is here managed with reasonable skill if not with entire felicity. From an inspection of the building one can understand the admiring wonder with which it was received, and how it should have become the fruitful parent of so many less respectable domed buildings in State Houses throughout the land, and even, as we shall see, in the national Capitol. It is not only remarkable, considering the period at which it was erected, but it remains a dignified and creditable public building, worthy of perpetuation in more monumental material than that in which it was originally executed.

The great architectural work of those years and of many years thereafter was the Capitol of the United States. It was in 1795, after Major L'Enfant had planned the "Federal City," that President Washington appointed a board of three commissioners to provide for the erection of suitable public buildings. They decided that the Capitol should exhibit "that true elegance of propriety which corresponds to a tempered freedom," and advertised for designs for such a building to be submitted July 15, 1792. They set forth that it was to be of brick, and issued a very general programme of requirements, embracing fifteen rooms in all. The advertisement brought no designs that seemed to the commissioners worthy of adoption, although Washington wrote that

he was more agreeably struck with Judge Turner's plan than with any other, mainly because it had a dome, which, in the President's judgment, "would give a beauty and grandeur to the pile," but it did not have the "porticos and imposing colonnade," upon which he equally insisted. Other designs were submitted, and on April 5, 1793, the President gave his formal approval to the plan submitted by Dr. William Thornton, because in it "grandeur, simplicity and convenience were combined," and the first prize of \$500 and a building lot in the new city was awarded accordingly. But the same award was also made to Stephen Hallet. Like the architect of Christ Church, Philadelphia, Dr. Thornton was a physician of that town, entirely an amateur in architecture, and Hallet, a Frenchman, who was a professional architect, and had practiced in Philadelphia, had no difficulty in showing that Thornton's design was impracticable, and that if it could be built the building would not be habitable. Accordingly he was chosen to revise Thornton's plan, but the resulting design resembled the original more than the reviser's own competitive design. It is noteworthy that it retained what Jefferson called "that very capital beauty," the portico of the east front. That Thornton was really the original designer is sufficiently shown in a letter of Jefferson's, written in 1811, in which he says that having been convinced, during his Presidency, that the interior arrangements could be improved, he "deemed it due to Dr. Thornton, author of the plan of the Capitol, to consult him on the change." Hallet became the architect of the Capitol, but kept the place for only two years, and was succeeded in 1794 by James Hoban, an Irishman, who had done architectural work in South Carolina and had been employed as Superintendent under Hallet. Indeed his functions in connection with the Capitol seem to have been chiefly of superintendence during his entire connection with it, which lasted for ten years, the work being done after the drawings first of Hallet and then of George Hadfield, an

English architect, who came to Washington highly recommended. Hallet had been dismissed by the Commissioners in consequence of a quarrel with Hoban and refused to surrender his drawings. Hadfield, who became architect in 1795, insisted that the plan under which Hoban was working was "capitally defective," but was overruled by Washington and by the Commissioners, and afterwards declined to hand over to Hoban for execution his accepted plans for the Executive Department buildings. His connection with the Capitol as architect came to an end in 1798, and the working drawings from that year until 1803 seem to have been furnished by Hoban. It does not seem, however, that Hoban can be called the designer of any part of the building, although he furnished the designs for the original Executive Mansion, and for its rebuilding after its destruction by the British. This was and is a dignified and even stately mansion, and does credit to the taste of its architect, if not to his power of design, since it was reproduced in all architectural essentials from a nobleman's mansion in Ireland. Hadfield was again employed as chief draughtsman under Latrobe, who became architect of the Capitol in 1803, and remained until 1817, carrying the building to the state of completion which it had reached at the time of the burning by the British in 1814, and restoring it after that interruption. Architecturally the burning, outrageous act of vandalism though it was, was by no means calamitous, since it enabled Latrobe to restore both interior and exterior with more monumental material and doubtless with more successful details. The changes necessarily cost money, and the additional cost embarrassed the architect and his employers. In the same letter of Jefferson to Latrobe, already quoted, he says "You discharged your duties with ability, diligence and zeal, but in the article of expense you were not sufficiently guarded." The labors of Latrobe undoubtedly determined the general arrangement of the Capitol, as we now see it, excepting the wings and the dome, and left his immediate successor little latitude except in de-



EAST FRONT OF THE CAPITOL



Washington.

WEST FRONT OF THE CAPITOL.

1793-1830.

tail. When in 1817, Latrobe found himself unable to agree with the single commissioner who, during his service had been substituted for the Board of Commissioners previously established, and resigned, he was succeeded by Bulfinch, who had met the new president, Monroe, in Boston, and had favorably impressed him. He modified the designs for such parts of the building as were not committed by construction, but in the main proceeded upon the lines laid down by Latrobe. The chief alteration he made was very questionable, being the change of the form of the dome into a cupola more nearly resembling in outline that of the Massachusetts State House, and the construction of a subordinate dome over each wing. In spite of its defects, however, the Capitol, as Bulfinch left it completed in 1830, was creditable to the country and to its own architects, the finest as well as the last development of colonial architecture. Its extreme dimensions were then 355 feet by 121, and 120 feet to the top of the dome.*

The influence of Thomas Jefferson upon American architecture was very considerable. His interest in it began at least as early as his rebuilding of Monticello, in 1770, and increased until the close of his life. He adopted, without question, the current dogma that the five orders were founded in the nature of things, and that architecture was an affair of orders exclusively, but he held that innovations might be made upon them to express other than antique conditions. The "American order" was for a long time attributed to him, and it may have been at his instigation that Latrobe undertook to supplant the acanthus with the maize and tobacco plant, in the decoration of capitals, and made the interesting essays to that end that still remain in the Capitol; though it has been clearly shown that Latrobe was the designer of the "order." The progress of the

Capitol, during his presidency, revived in Jefferson the interest of his early manhood. In rebuilding his own house, he had been forced to become his own architect and almost his own builder. So low was the state of the mechanic arts in Virginia in 1770, that the window-sashes were imported from London. In his "Notes on Virginia" (1781), he complains that "a workman could scarcely be found here capable of drawing an order." "The genius of architecture," he continues, "seems to have shed its maledictions over this land. * * * The first principles of the art are unknown, and there exists scarcely a model among us sufficiently chaste to give an idea of them."

The first fruit in a public building of his architectural zeal was the Capitol of Virginia, at Richmond, commonly, but inaccurately, said to have been designed by him. After the change of the capital from Williamsburg to Richmond, and in 1785, Jefferson, being then in Paris, was consulted with reference to the design of the new State House, and he consulted "M. Clarissault, one of the most correct architects of France." The capitol, according to Jefferson himself, is "the model of the temple of Erechtheus at Athens, of Baalbec, and of the Maison Carrée at Nismes, the most perfect examples of cubic architecture, as the Pantheon is of the spherical." (The reasoning and the collocation have alike a seriously old-fashioned air to modern students.) Jefferson goes on to say that the Maison Carrée was selected more specifically, retaining the proportions while enlarging the building, but with the change of the capitals from Corinthian to Ionic, "on account of the expense." Throughout the colonial period, indeed, the Corinthian order was very little employed, doubtless because of the extreme difficulty and costliness of reproducing the capital in wood. Not only were Ionic capitals substituted for Corinthians, but "I yielded with reluctance to the taste of Clarissault in his preference of the modern capital of Scamozzi to the more noble capital of antiquity." The Capitol is 134 feet by 70 in area and 45 high, excluding the basement.

* I do not pretend to reconcile the discrepancy between the two views of the Capitol. Both were drawn by W. H. Bartlett, though they were rendered by different engravers, and both were published after 1830. It is possible that the artist never saw the building, and probable that the view of the east front shows Latrobe's design for the dome, the taller dome and the subordinate domes in the view of the west front being Bulfinch's.

Undoubtedly, the most considerable outcome of Jefferson's interest in architecture was the last. The University of Virginia, of which he desired to be commemorated in his epitaph as the father, was the child of his old age, and it was the formation of this institution that was his chief care from his retirement from the presidency in 1809 until his death in 1826. He was unquestionably and alone the architect of it, and after the aid of the State had been pro-

the dormitories of the students, accentuated at intervals by the "pavilions" which consisted of professors' houses. The long vista between these colonnades was to be closed by a reproduction, one third the original size, and considerably modified, of the Pantheon, "the most perfect example of the spherical." The most important of the modifications is the omission of the second attic and pediment. Against the rear of this abuts the posticum



STREET FRONT OF THE UNIVERSITY OF VIRGINIA.

Charlottesville, Va.

A. D. 1819-26.

Thomas Jefferson, Architect.

cured by the Act of 1819, he pushed on the execution of his architectural project until it was in great part realized, and the institution in actual operation before his death. His project was grandiose and impressive. The buildings were to line three sides of a quadrangle, 600 feet by 200, the fourth side being left open. The curtain wall of the long side was to be a continuous colonnade of one-story high, being the front of

of an amphiprostyle Corinthian temple, for which the *Maison Carrée* seems to have furnished the model, and to have retained in Jefferson's mind for thirty years its place as "the most perfect example of cubic architecture." The portico, hexastyle and three columns deep, as at Nîmes, forms the main entrance to the University, and was evidently intended to be finished by an imposing terraced approach with double flights of steps. The scheme

was completed by two additional ranges of dormitories, facing outward, parallel with the ranges facing the campus and 200 feet distant from them.

Considering the resources available for carrying it into execution, Jefferson's scheme was incomparably the most ambitious and monumental architectural project that had or has yet been conceived in this century. If the execution was not at all points ade-

quate, it must be admitted to have been very surprising for a remote Virginian village. The campus of the University of Virginia as it now appears, has far more unity, dignity and impressiveness than the heterogeneous "college-yard" of any other American institution of learning. It is not strictly colonial in style, but in great part a prefigurement of the Greek revival which was shortly to supplant colonial architecture. The professors' houses, the "pavil-



Charlottesville, Va. CAMPUS FRONT OF THE UNIVERSITY OF VIRGINIA.

nade is continued across the front in the form of an arcade, and supports the order of the second story, in which its material is confessed in a departure from classical proportions and the "too wide intercolonations" with which the youthful Jefferson had found fault in the old Capitol of Virginia. The material of the monumental buildings of the University, though not always genuine, is solid and durable, and enough of it is genuine to increase the wonder that

quate, it must be admitted to have been very surprising for a remote Virginian village. The campus of the University of Virginia as it now appears, has far more unity, dignity and impressiveness than the heterogeneous "college-yard" of any other American institution of learning. It is not strictly colonial in style, but in great part a prefigurement of the Greek revival which was shortly to supplant colonial architecture. The professors' houses, the "pavil-

such a project could have been carried out during the first quarter of the century. The capitals and bases of the large columns are of marble, cut in Italy; the shafts of brickwork covered with stucco, of which also the colonnades of the dormitories are built. It is evident that Jefferson in his architectural zeal subjected himself to his own admonition to Latrobe and "in the article of expense" was "not

which was under construction for the ensuing eight years, and indeed longer, though it was occupied in 1811. It remains the most admirable specimen of architecture belonging to the city, being effective in its composition, and of careful and scholarly design in its detail. In mechanical execution it was very far in advance of any building that had then been erected in New York or in the country, and showed that a



HOUSE AND DORMITORIES ON THE CAMPUS, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA.

sufficiently guarded," for before the University was opened what was then the enormous sum of \$300,000 had been spent upon it, and this extravagance combined with Jefferson's selection of a President tainted with Unitarianism to bring the University into popular disfavor and to make its early history one of continual struggle.

It was in 1803 that the corner stone was laid of the City Hall of New York,

body of stone-cutters had become available who could carry out with great precision and even with spirit an extensive design which involved a profuse use of carved decoration. It is noteworthy that in the discussion concerning the material to be employed, which resulted in the choice of marble for three of the fronts, it was an architectural emulation of Philadelphia that was invoked, although the Massachusetts



OLD ACADEMY, ALBANY, N. Y.

State House, a much more monumental edifice than existed elsewhere in the United States, had been completed for five years. The report of the building committee in favor of the use of marble, made in September, 1803, sets forth that seeing "that as a commercial city we claim a superior standing, our imports and exports exceeding any other in the United States, we certainly ought, in this pleasing state of things, to possess at least one public building which shall vie with the many now erected in Philadelphia and elsewhere." The appeal was successful. The building was constructed with three fronts of marble from Massachusetts, and with one, then the least conspicuous, of brown sandstone from New Jersey. The frontage of the building is 215 feet 9 inches. Its cost was not far from \$500,000.

John McComb was the architect of record of the City Hall, but an obstinate tradition affirms that the actual designer was a Frenchman named Mangin. The denial of the authorship to McComb certainly receives some support from the most interesting and successful of the buildings of the same period at Albany, the Academy. This was begun in 1815, four years after the completion of the City Hall, and finished in 1818. The design bears marks of colonial building, from which the earlier building is free, such as the emphasis given to the construction of the walls in two planes, very frequent in brickwork of the colonial period. But the resemblance of the two buildings in design is nevertheless very striking, and as evidently is not the result of direct imitation on the part of the designer of the more recent; while the detail in each case shows a like knowledge and propriety. McComb was certainly not the architect of the Albany Academy, whose name is given as Seth Geer. If we accept this and the corresponding record in respect to the New York building as final, we are required to believe that two untraveled Americans had acquired architectural training enough to design buildings of considerable elaboration and novelty as well as the power, then common among well-trained carpenters, of applying the

forms of the classic orders without committing solecisms. It seems simpler to believe that the two employed the same educated foreigner as draughtsman and designer. Though the Albany Academy is much smaller and less costly than the City Hall, having but 90 feet of frontage, and costing but \$90,000, it justifies the praise of the author of a "Description of Albany" in 1823, as "a large and elegant pile of masonry, in design and execution the most chaste in the city;" for the only other secular public building then extant was the old Capitol begun in 1810, and lately demolished to make room for the new. This was much less considerable than the Academy, being in a coarse version of classic with a Corinthian portico of columns of brickwork veneered with marble, reeded instead of fluted. There is nothing in its design which we cannot readily accept as within the power of the common American builder of 1810.

Dwelling houses necessarily precede "meeting houses," for either sacred or secular purposes, but the very first provision for shelter in a new country cannot be durable. There is no part of the Atlantic coast in which timber was not readily available at the time of the first European settlements, and the very first buildings must in all cases have been log cabins. They continued the first dwellings of the pioneers as settlement went inland, and indeed they still continue to be. But as soon as the settlement became permanent and provision for shelter other than temporary, the log cabin ceased to be built. It would be interesting to know the date of the introduction into America of the saw-mill, which for a century and more has determined and dominated the vernacular building of the country. It existed in Norway before the middle of the sixteenth century, and a futile effort was made, by a Dutchman, it is worth noting, to introduce it into England shortly after the middle of the seventeenth. But it did not accompany or closely follow the advance of civilization until the present century, and indeed it is not uncommon to find houses in New England built



WASHINGTON HOUSE, GERMANTOWN, PA.

within this century of which the clap-boards bear the marks of the axe. It may at any rate be laid down as a rule that the new dwellings of the second or third generation in any part of the country were no longer log cabins. To this rule there were exceptions and one of them was noted by Jefferson, who says that in Virginia, in 1781, "the poorest people build huts of logs, laid horizontally in pens, stopping the interstices with mud," and this, of course, is a description of the log cabin. But it is at least evident that the log-cabin was merely a shelter, and generally a provisional shelter. No attempt, that is to say, was made, when more costly and more leisurely building became possible, to develop the log-cabin either practically into a commodious or architecturally into a decorative dwelling. Nothing was developed here at all corresponding in skill or elaboration to the log-architecture of Switzerland or Scandinavia, and such examples of this architecture as are to be seen in this country are either importations, like the admirable Swedish school-house shown at the Centennial Exposition of 1876 and now in Central Park, or reproductions or imitations of European models, like the equally admirable building erected for the State of Idaho in the Columbian Exposition of 1893. It is perhaps unfortunate that the log-cabin should have been so soon and so completely supplanted, but it is certain that it never attained to such a development, or exercised such an influence upon succeeding buildings as entitles it to be mentioned in an account of architecture in America.

The date of the establishment of the first brick-kiln in America would be as interesting to know as the date of the establishment of the first saw-mill. It is certain that bricks were made upon both the Delaware and the Hudson early in the eighteenth century, but not likely that they were made extensively during the seventeenth. The earliest authentic instance I have been able to find of the use of native brick is in the first public buildings of Annapolis (1696-7). When Jefferson built Monticello, in 1770, the

bricks for the mansion were burnt on his own estate and under his own direction, a fact which goes to prove, as well as his own explicit statement eleven years later, that bricks were not a staple commodity in Colonial Virginia. If the date of the old church near Smithfield be accepted, it seems clear that the excellent bricks of that structure, as well as the excellent bricklayers, must have been specially imported. The earliest houses that remain to us are for the most part of rough masonry, sometimes with no brickwork, sometimes, as has already been said, with so sparing a use of brick as to indicate that it was an exotic and costly material. Of the former class is the Sip house on Bergen Heights, opposite New York, still or very lately standing and inhabited by the seventh in descent from the Sip who built it in 1666. Of the latter was the house at Gowanus which was demolished about twenty years ago, and which bore its date, 1676, in figures of iron upon its gable. The last Dutch house left in Albany, on the other hand, demolished in 1893, after an existence of two centuries, was entirely of brick, but of brick unquestionably imported. Like the Sip house on Bergen Heights, the old houses at Hackensack of the end of the seventeenth century and the beginning of the eighteenth, commemorated by Mr. Black in his interesting paper in the *ARCHITECTURAL RECORD* (Vol. III, No. 3), were rectangles of rough masonry, one story high, with a superstructure of timber, including the gables. They derive their one touch of picturesqueness, probably an unconscious touch, from the projection of the roof and of the floor-beams, with the simplest possible form of verandah, needing no supports from beneath. It is scarcely available for shade, but it forms an outside shelter and a protection against eavesdropping. The same device is a mark of the origin of such Dutch farmhouses as still remain in Flatbush and other suburbs of Brooklyn. The suburbs of New York, indeed, both in Long Island and in New Jersey, continued to be Dutch settlements throughout the eighteenth cen-



2 FRONT GABLE, HARWOOD HOUSE.



WARNER HOUSE, PORTSMOUTH, N. H.

tury, and constitute the most important exception to the rule that colonial building was English building. They scarcely constitute an exception to the rule that colonial architecture was English architecture.

Albany, indeed, remained Dutch long after New York had become English. Morse, describing it in 1789 for his "American Geography," says that the houses were "built in the old Dutch Gothic style, with the gable end to the street, which custom the first settlers brought with them from Holland." Albany, so largely brick-built as it was long before this, must have made the impression of a durable as well as of a quaint and picturesque town upon the travelers from the South as well as from New England. I have already referred to Jefferson's deprecation of the universal use of wood in Virginia. The rosy Jones had written sixty years earlier of Virginia: "Here, as in other parts, they build with brick,

but most commonly with timber lined with ceiling and cased with feather-edged plank." Forty years earlier still Dankers and Sluyter wrote of Massachusetts: "All the houses are made of small, thin cedar shingles, nailed against frames and then filled in with brick and other stuff, and so are their churches." It is obviously unlikely, by the way, that bricks should have been imported for filling. What remains of the earliest building of New England, as well as inherent probability indicates that the "shingles" of this description are the same as the "feather-edged plank" of Jones and the "construction of scantling and plank" of Jefferson, and would now be called clap-boards. This was the vernacular building of the colonies as it is of the states. There were but four brick dwelling houses in Portsmouth, according to its annalist, before the beginning of the present century. But while Albany doubtless derived from its ma-

terial a look of more permanence than other settlements, the only badge of the "old Dutch Gothic" was in the crow-stepped gables, though not all of them were crow-stepped, and the houses were humble in dimensions and simple in construction. The Dutch house near Tarrytown, built in 1650, which Washington Irving, with the assistance of George Harvey, architect, rebuilt in 1835, and called Sunnyside, was a more commodious residence after the re-

Troy under excavation. A part, not more than half, of the Philipse manor-house, now the City Hall of Yonkers, was built during the seventeenth century by Frederick Philipse the first Lord of Philipsburg, and builder of the church at Sleepy Hollow, the remainder being added by his grandson in 1745 in unquestionable English colonial. The workmanship of the old part is substantial but rude, and the interior fittings with their clumsy mould-



PADDOCK HOUSE, PORTSMOUTH, N. H.

building than at first, and yet Thackeray described it justly as "but a pretty little cabin of a place." Nay, the "great Vanderheyden palace," built in 1725, and entirely Dutch in architecture, which was the boast and wonder of Fort Orange, and the weathercock of which now adorns Sunnyside, measured but fifty feet by twenty and had two rooms on the ground floor. The early Colonial glories shrink under investigation as proud

ings suggest the handiwork of a shipwright turned joiner. But this edifice, built as it was by the richest man in New York, shows the extreme of elegance that was attainable under the Dutch dynasty.

The town-houses of the prosperous merchants of New York and Boston and Philadelphia took on during the eighteenth century a very similar aspect. Such examples as the Frankland and Hancock houses in Boston, the



GOVERNOR LANGDON'S HOUSE, PORTSMOUTH, N. H.

Walton house in New York, and the Arnold house in Philadelphia, show the type, a solid symmetrical, rectangular mansion of brick, sometimes quioned, often covered with plaster, a substantial and decorous, but scarcely artistic dwelling. Towards the close of the politically colonial period there came in, in New England and the Middle colonies, the notion referred to by Cooper in "The Pioneers," and apparently shared by him that there was a certain indelicacy in the exposure of the roof. Possibly this was an Anglomaniacal revolt against the steep roofs of the Dutch. At any rate the roof in the most pretentious houses came to be kept as low as was prac-

tically possible, and still further concealed by a balustrade. The Arnold mansion shows the limits of the mason's craftsmanship, as it was allowed to be exhibited in the town-houses. The carpenters and the plasterers possessed a much higher degree of skill, and to the former the exterior as well as the interior decoration of the houses was confided. In composition the only architectural quality these mansions had was the often effective proportioning of the stories to each other. The exterior decoration was confined to the entrance, which was designed by the carpenter, from the manuals of his trade which he or his predecessors had brought from the old country. He

followed his models with literal fidelity and with a high degree of mechanical skill, and it is his detail and that of the plasterer that we commonly mean when we speak in praise of colonial architecture. It was indeed very good detail of its kind, the more taking by contrast with what succeeded, when the carpenter had passed an architectural declaration of independence and trusted to his own invention. The order that embraced the entrance formed an effective central feature, whether or not it was accompanied by the decorated window that often appeared above it, as in the Scott House at Annapolis, or expanded into a portico of two orders, as in the Pringle House at Charleston. The schooled and respectful carpenter of colonial times survived in New York for at least the first third of the nineteenth century, and the stonemasons arrived at a skill sufficient to translate the prim refinement of his work into more permanent material. Thus St. John's Park and Bond street and Washington square were successively built up with mansions that owed to this detail a real attractiveness, and the well designed and executed entrances lent a grace to a much humbler dwelling, the brick high-stoop house, of two stories a basement and an attic that was the typical New York dwelling until it was supplanted by the brownstone front. This type established itself in Albany and in the older towns of central and western New York, as a much simpler type, indeed a type characterized by a simplicity that amounted to baldness, spread itself westward from Philadelphia. At the end of the first quarter of this century New Yorkers were architecturally better housed than either Philadelphians or Bostonians. If the Virginian whose opinion of New York in 1789 we have quoted, had postponed his visit for forty or even thirty years he would have been compelled to award it the prize of "elegance."

With respect to country houses, it is to be noted that New England at no time possessed a landed gentry. The rural parts of it were inhabited during the colonial period by small farmers, and the rich men were townsmen whose

fortunes had been gained in commerce. The chief of them, indeed, had been made in the fisheries, an historical fact, which survives in a phrase of Bostonian origin, the "codfish aristocracy." It was the town houses that were the costly and pretentious dwellings, and they were confined to the seaports, which were, indeed, the only towns. What is now known as the Warner house in Portsmouth, built by Captain McPhaedris, "an opulent merchant," in 1718, of bricks imported from Holland, was the wonder not only of Portsmouth, but of all New England, for its solidity and its cost, which reached what was then the prodigious sum of £6,000. It is unlikely that Boston itself contained so pretentious a dwelling. Of its most famous colonial mansions the Frankland house was built in 1735, the Hancock house in 1737, and the house of Governor Shirley in 1748. The Portsmouth house is almost exactly contemporary with the Vanderheyden palace, and the comparison is instructive. It is especially noteworthy as illustrating how the colonial dwellings of New England that are important enough to be considered an example of colonial architecture were town houses and never country seats.

What is true of New England in this respect is true of Pennsylvania. It is not quite true of New York, for New York possessed a landed gentry in the holders of the manorial grants, and these possessed "seats." The seats were not of much architectural importance. Most of those along the Hudson River, were built of wood and have perished, and of those which were built of brick few had architectural pretensions or importance, beyond what was given to them by mere size. The manor-house of the Van Rensselaers, of Rensselaers Wyck, was one of the most pretentious as well as one of the most successful of these, having form and comeliness as well as size, though the wings and the portico, that add so much to its attractiveness, were added from the designs of Richard Upjohn in 1847—the body of the house dating from 1765. It must have been almost as great a wonder in its time at Albany as the McPhaedris house in Portsmouth



THE PRINGLE MANSION, CHARLESTON, S. C. (PRE-REVOLUTIONARY.)

half a century before. The mechanical advance in the interval is in one respect noteworthy, for whereas hewn stone was unknown in New Hampshire in 1720, the quoins, sills and lintels of the Van Rensselaer house are of this material. The same prodigality is shown in a profusion of carved work in mahogany and pine, somewhat ruder in execution and feebler in design than such decoration could then have been found at the seaboard, but carved with spirit and with tolerable precision. The other brick country-houses that remain

Carolina" (1761) assures his readers that "the men and women who have a right to the class of gentry are more numerous here than in any other colony in North America." However that may be it is certain that there was much visiting and entertaining between the plantations, and that the plantation houses were designed and built accordingly. Unfortunately they built of wood, and their buildings have passed away. The author of the "Description for Protestant Immigrants" (1731) assures us, it is true, that "if you travel



VANDERHEYDEN PALACE.

in New York and New Jersey are much plainer and simpler, following the type of the Philipsburg manor-house at Yonkers, though the interiors are apt to be decorated with some rather elaborate wood carving, often including a room panelled in oak or pine, and some very elaborate plastering.

It was in the South, however, that family seats most abounded. The planters of rice and indigo in South Carolina, for as yet cotton was not a Southern crop, made money and spent it easily. The author of "A Short Description of the Province of South

into the country you will see stately buildings, noble castles and an infinite number of all sorts of cattle." But his style discredits him as the unscrupulous author of a prospectus with designs upon the Protestant immigrants, and he lacks specification.

It was in Virginia and Maryland that the great tobacco planters became the most considerable landed gentry in the colonies, and built houses to contain themselves and their acquaintances which are the most extensive and the most interesting of colonial country houses. "The inhabitants of Virginia,"

Burke wrote, "are a cheerful, hospitable and many of them a genteel, but somewhat vain and ostentatious people." The life of the "barons," of the Potomac and Rappahannock, the York and the James and of the Chesapeake was patriarchal, and when tobacco became a lucrative crop, they projected and built their mansions on patriarchal lines. Except for a short season at Williamsburg or Annapolis, they lived at home or at each other's homes, and

was only "founded," and the nucleus of the present mansion constructed, in 1700, Brandon about 1740, The Grove 1746, Westover 1749. They were for the most part as originally designed symmetrical and rectangular masses of brickwork, the projecting porches and verandahs of such as have them being subsequent additions, required by a sunnier climate. Of exterior ornament there was little, and that little confined to the entrance. This



LONGFELLOW HOUSE, CAMBRIDGE, MASS.

they made their homes capacious accordingly. How patriarchal the life was may be inferred from the advice of one Virganiian to another, delivered within this century: "Never buy an hereditary place, for many people think they have as much right there as the owner." The great houses of the lower James are ancient as we Americans count antiquity. Shirley, the seat of the Shirley Carters, is said to have been built, though more probably it

is the more remarkable because the interiors are so elaborately wrought. The explanation, doubtless, is that in "the scarcity of handicraftsmen," the mere bricklaying was all that could be done on the spot, while elaborate woodwork could be imported from England, and only put in place by the native workmen. One may pronounce with confidence that the rare specimens of hewn stone, such as the urns of Westover, were carved in England and shipped from



DINING-ROOM, CHASE HOUSE.



VAN RENSSELAER MANOR HOUSE, ALBANY, N. Y.



EMERTON HOUSE, SALEM, MASS. (REMODELED).

the stone-yard at London or Bristol to the purchaser's wharf. Evidently the ornamental iron work is from a foreign smithy. The embellishments of the mansions of Virginia and Maryland are, indeed, examples of English work of the period, and do not exhibit the slight modifications of it which are traceable at the North and differentiated the later colonial from English. In Maryland, as the aspect of Annapolis assures us, the scarcity of handicraftsmen was less than in Virginia. The mansions were really designed, outside as well as inside, and apparently by colonial mechanics. Homewood, in Baltimore, was built about 1780, but its design is evidently a reminiscence of that of Whitehall, erected in 1740-50 as the seat of Governor Sharpe. Each of these, unlike the great Virginia houses, exhibits a real and effective architectural composition, having unity, variety and subordination, with a discreet use of ornament good in itself and appropriate in scale and in form to its place. Not many examples of domestic architecture since have been more artistic, and none have expressed more distinctly the notion of a decorous and refined social life.

Doubtless this expression is the highest achievement of colonial architecture, which it reaches oftener in the minute detail of an interior than in the design of a building, or even in the composition of a front. In the expres-

sion of American life, Colonial architecture left very much to be desired, but what such a mode of building saved us from, when as yet there were no educated architects, may be seen from what followed when the trained and deferential colonial carpenter was succeeded by the emancipated and disrespectful provincial carpenter. Even the freaks of the colonial carpenters, and they sometimes indulged themselves in freaks, were gentle and subdued extravagance. The very timidity and feebleness that often accompanied the refinement of their work becomes in the retrospect an engaging and amiable weakness ;

No black-souled villain ever yet
Performed upon the flageolet.

It has been very well said of colonial building that "in the hands of a man of genius it would have been a poor tool, but to the men who had to use it, it was salvation." The examples of it which have been noticed in this survey surely suffice to convict of singular recklessness a popular historian of the United States, who ventures to say that "there did not exist in the country," in 1784, "a single piece of architecture which, when tried even by the standard of that day, can be called respectable. Not a church, not a public building, not a house has been preserved to us that is not a deformity."

Annals of Annapolis; Adams' Annals of Portsmouth; Brewster's Rambles About Portsmouth; Burke's Account of the European Settlements in America; Conway's Barons of the Potomac and Rappahannock; Frazer's Reminiscences of Charleston; Meade's Old Families and Churches of Virginia; Historical Collections; South Carolina, N. Y., 1836; Connecticut, New Haven and Hartford, 1836; New York, N. Y., 1842; Pennsylvania, Philadelphia, 1843; Virginia, Charleston, S. C., 1845; Historic Churches of America, Philadelphia, 1893; Jefferson's Notes on Virginia; Jefferson's Writings (9 vols., N. Y., 1853-4); Schouler's Life of Jefferson; Jones' Present State of Virginia, London, 1723; A Short Description of the Province of South Carolina, London, 1761; Descriptions of South Carolina for Protestant Immigrants, 1731; Mason's Newport Old and New; Mason's Reminiscences of Newport; Munsell's Annals of Albany; McMaster's History of the

United States; Morse's American Geography, 1789; Weise's History of Albany; Scharf's History of Maryland; Winsor's Memorial History of Boston; Philadelphia and Its Environs; Annual Address Before the American Institute of Architects, 1876 (A. J. Bloor); Annual Address Before the American Institute of Architects, 1881 (J. H. B. Latrobe); *Harper's Weekly*, April 25, 1885, February 13, 1892; *International Review*, November-December, 1874; *Century Magazine*, January, 1891, June, 1891; *Lippincott's Magazine*, July, August, 1884; *Magazine of American History*, October, 1881; *Architectural Record*, Vol. I., No. 3, Vol. III., No. 3; Year Book of Trinity Parish, N. Y., 1894; Chandler's Colonial Architecture of Maryland, Pennsylvania and Virginia, Boston, 1892 (Bates, Kimball & Guild). To the publishers of the last-named work we are indebted for permission to reproduce five illustrations in the foregoing article.

Montgomery Schuyler.



MEMORIAL WINDOW TO JAY GOULD,
(Centre window of group of three.)

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MEMORIAL WINDOW TO JAY GOULD,
(Left-hand window of the group of three.)

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NEW BOOKS.

The Reign of Queen Anne. By Mrs. M. O. W. Oliphant. New York: The Century Co.

The reign of Queen Anne was not only one of the most eventful in English history, but it is distinguished as marking for the Anglo-Saxon race, the culmination of a mood between which and the genius of the people there is, one may say, a fundamental hostility. It is common to speak of Queen Anne's times as the Augustan Age. The title is inexact, but it serves sufficiently well to characterize the only "age of letters," in the restricted meaning of the term, in English history. For the American architect the period will always possess a special interest. It was the Age of Wren, when those architectural forms were naturalized on British soil which subsequently inspired the earliest attempts at architecture in this country. If some familiarity with the social history of the times in which it arises is necessary to a full understanding of any particular phase of architecture, students of the "old colonial" style cannot do better than make a starting point with the history of Anne's reign. Mrs. Oliphant's work will serve excellently for introductory reading. In a series of biographies the chief events of the reign and the distinguishing tone of the period are clearly and sympathetically set forth. In this case the biographical method imposes few limitations upon the historian, for it is remarkable how naturally the history of the times groups itself around a few persons—Anne, herself, Marlborough and his ambitious wife, "dear adored Mrs. Freeman," Swift and Addison, and the political and literary company that gathered about them. Mrs. Oliphant's work is remarkably pleasant reading. The story moves fluently in an easy, clear, felicitous style which unfortunately is too frequently lacking in "history." The book is superbly illustrated and the binding and typography re-

flect much credit upon the publishers, the Century Company.

Schools and Masters of Sculpture. By A. G. Radcliffe. New York: D. Appleton & Co.

This work will serve excellently for the general reader or for the student requiring a clear untechnical text-book on the history of Sculpture. The author plainly has kept in view the deficiencies and requirements of the uninstructed. The work, consequently, is popular in style and presents to the reader rather the interesting facts of the plastic art than the essential ones. The philosophic note, the point of view, is entirely absent. Instead, we have an easy conversational treatment which avoids difficulties and keeps the reader free from the embarrassment of technicalities and the trouble of striving for *insight* into the masterpieces described or the schools to which they belong. In this manner the entire history of the art is covered from the early realistic Egyptian statues to the last productions of St. Gaudens. Two chapters are given to the study of sculpture in the museums of Europe and America—an excellent idea—which will be found of real utility by travelers and students visiting the great national collections. The volume is well and abundantly illustrated.

Engineering Construction in Iron, Steel and Timber. By William Henry Warren. London: Longmans, Green & Co.

It is impossible within the limits of a short notice to consider in detail a work of the character of this one. The primary object in view in writing the book, the author says, was to prepare a text-book for students attending the first portion of his lectures (University of Sidney, New South Wales,) on materials and structures, but he considers that the work may be found useful



PRINCESS ANNE,
From Mrs. Oliphant's "Reign of Queen Anne,"

not only to engineering students in technical colleges and universities, but also to those engaged in the design of constructional iron and steel. It is to the latter, we apprehend, that the work will be of most value, and by them it will be found to contain a clearer and upon the whole more satisfactory statement of the modern theory and practice of construction than is to be found elsewhere. The excellent plan of giving examples selected from existing structures has been adopted. The author evidently is well acquainted with American practice. His eye one may say is constantly upon it and his familiarity with European methods enables him to give a far more comprehensive scope to his remarks than is to be found in any other work of similar compass. In common with English technical books of the higher grade the typography of this volume is excellent—an example to American publishers and authors.

The Meeting Place of Geology and History. By Sir J. William Dawson, F.R.S. New York, Chicago and Toronto: Fleming H. Revell Company.

The object of this work is better indicated in the following passage than in its title: "If we take the Canstadt people to represent the under tribes of the antediluvian Cainites, the feeble folk of Truchere, to represent the Sethites and the giant race of Cromagnon and Mentone as the equivalent of the 'mighty men' or Nephelim of Genesis who arose from the mixture of the two original stocks, we shall have a somewhat exact parallel between the men of the caves and gravels and those we have so long been familiar with in the Book of Genesis." This is asserted with no positiveness, but by adopting the theory of the comparative recency of man and denying that the development of the savage into the civilized man, was the matter of the slow process that some scientists claim it to have been, and by a series of interesting reasoning, argument and illustration, the author endeavors to leave upon the reader's mind the impression that there is a strong relation between the primitive history of man in Genesis and scientific discovery.

Renaissance and Modern Art. By Wm. H. Goodyear. Chautauqua: Century Press.

A work in which history and architecture interpenetrate is that recently issued by the Chautauqua Society from the pen of Wm. H. Goodyear. With Mr. Goodyear architecture and history are inseparable. Architecture with him is not the isolated fact that it appears to be in the

ordinary text-book. To treat of the entire art of the Renaissance period, especially when the Renaissance is regarded as still continuing, in a book of only 300 pages requires an effort of condensation which almost precludes a successful narrative. Mr. Goodyear, however, has told his story interestingly. It has nothing of the disjointed character common to the text-book. Each step that the reader takes forward is a step through the entire breadth of the subject. Proportion, too, is well observed, and the student is greatly assisted by the interpolation in the text of 203 engravings of the chief works of architecture, sculpture and painting of the period considered. We very heartily recommend this work to our readers. It supplements the volume, "Roman and Mediæval Art," issued recently by the same author in the same series, of which we shall speak later.

Childhood in Literature and Art. A Study. "By Horace E. Scudder. Houghton, Mifflin & Co. \$1.25.

Mr. Scudder is an essayist whose work invariably possesses literary charm and music. His last volume is one of his most delightful essays. "We are justified," says Mr. Scudder, "in believing childhood to have been discovered at the close of the last century." Men, women, lovers, maidens and youths have figured in literature from the earliest times, but it is in modern days that the child has been added to the *dramatis personna* of literature. We do, of course, in the older writers catch occasional glimpses of childish figures, but they are occasional and fugitive glimpses only. Mr. Scudder goes curiously into the subject and shows us in a series of delightful chapters the part which childhood played in Greek and Roman literature, in early Christian and Mediæval art, and in English, French and German literature and art. A chapter is devoted, indeed, how could it be omitted? to Hans Christian Andersen—the child's Shakespeare. A final chapter is given to "Childhood in American Literary Art."

Costume of Colonial Times. By Alice Morse Earle. New York: Charles Scribners Sons.

It is a good sign, the interest which we are beginning to take in the early social history of our country. The revival of Old Colonial Architecture is a mark of this interest. In spite of the work that historians have done it is remarkable how many questions concerning the first period of American history may be asked with-

out finding answers. We have not yet a complete history of Colonial Architecture. The dates of even the most important buildings have to be dug out of local histories. The author of this book has found the material for her work in letters, wills, inventories of estates, court records, and eighteenth century newspapers. The result is a valuable glossary containing a great amount of curious and interesting information. The work should certainly find a place on the historical shelf of every library, and unlike many books of reference it is distinctly good reading

Architect, Owner and Builder Before the Law.

By T. M. Clark. New York: Macmillan & Co. \$3.00.

Some legal knowledge is absolutely necessary to the safe practice of architecture. Hitherto there has been no work at once adequate and comprehensible to the lay mind to which the architect could turn for information. This deficiency has now been very adequately supplied by Mr. T. M. Clark's work. We recommend this work to our readers without any qualifications whatsoever. It is absolutely indispensable to the architect. It is not only a thorough piece of work on the legal side, but it is very good reading as well, and will give every architect who studies it a clear knowledge of his relationship to owner and builder as defined by the courts.

The Norman Monuments of Palermo. By Arne Dehli and G. Howard Chamberlin. Boston: American Architect and Building News Co.

It gives us very great pleasure to announce that the American Architect is now offering Dehli and Chamberlin's "Norman Monuments

of Palermo" at a reduced price. This useful work, it will be remembered, was originally published by Messrs. Ticknor & Co., at \$5 for each part. The four parts of the work can now be obtained for \$12, and at this low price it should certainly find a place in every architect's library. The chief feature of the book, naturally, is the prints, of which there are three, 13x18, in each part, besides a dozen plates of measured detail work. The latter will be found of much practical usefulness, as we know of no other work to which one can turn so readily for exact details of the unique architectural development which followed the Norman conquest of Sicily. The engravings are supplemented by adequate descriptions and some interesting historical notes.

The Renaissance Under the Valois. By Charles T. Mathews, M.A. New York: Wm. T. Comstock.

The attention which has recently been bestowed by American architects on the earliest phases of the Renaissance, gives especial value to C. T. Mathew's sumptuous work, "The Renaissance under the Valois." This period of the classical revival offers abundant precedents and examples well worth the attention of the modern architect in search of a style. It is certainly the most picturesque phase of the Renaissance. Mr. Mathews has gathered from the great French collection of photographs the best examples of the style. He has added to these a careful and sympathetic essay, which describes the buildings illustrated and surrounds them with the social and artistic conditions amid which they were produced. The illustrations are excellently done and the volume is handsomely bound.





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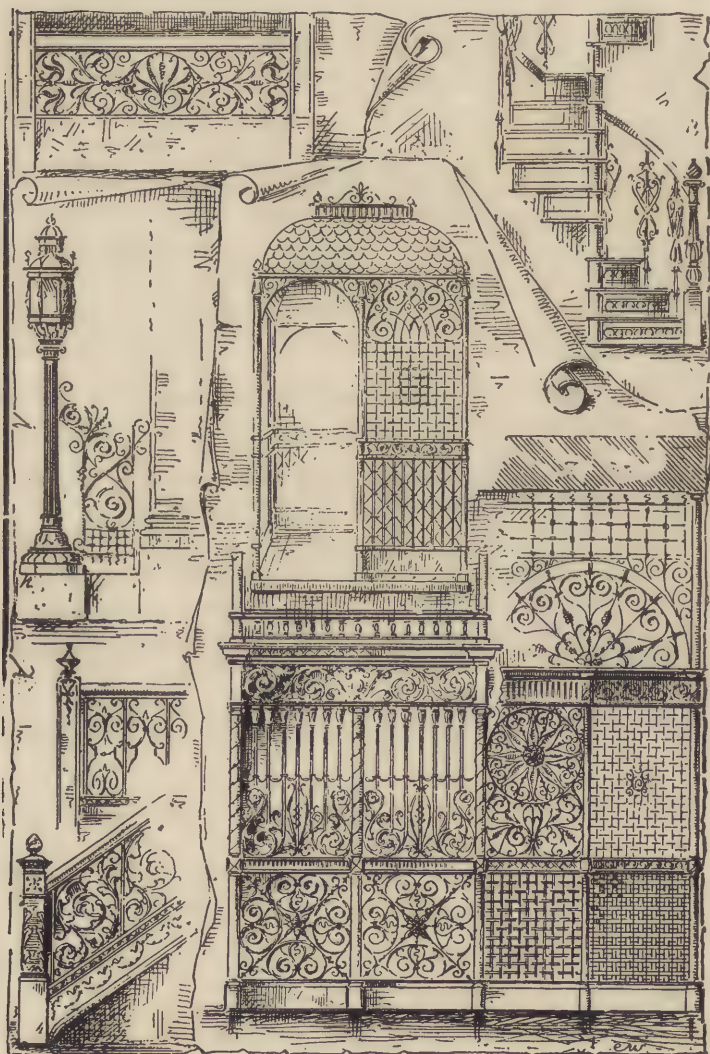


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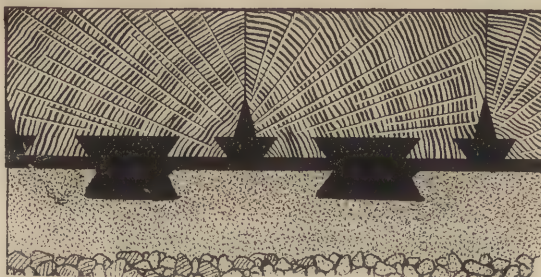
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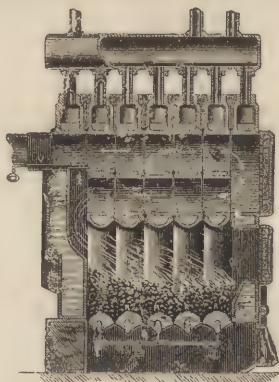
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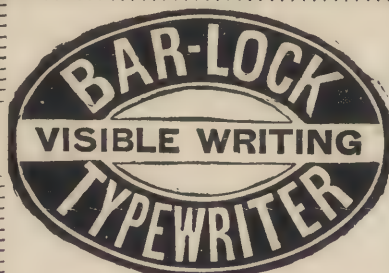
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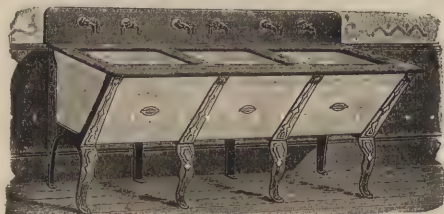
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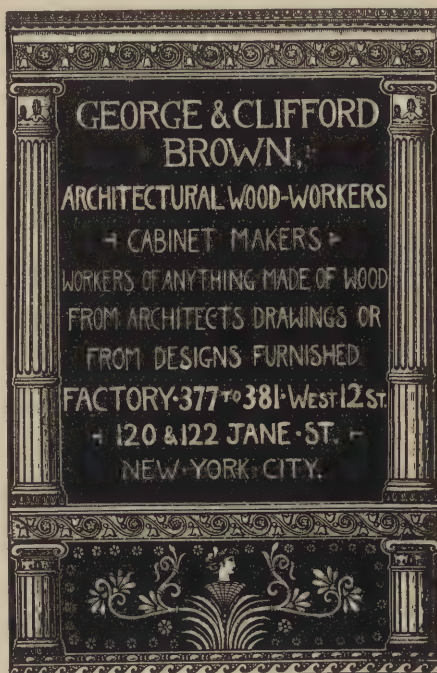
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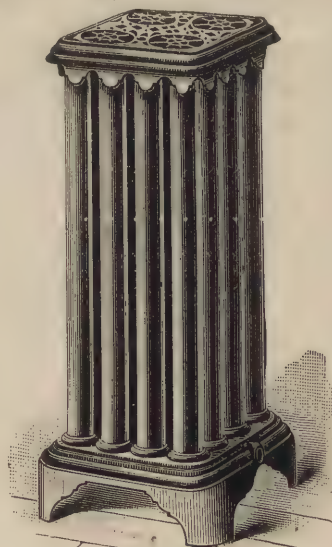


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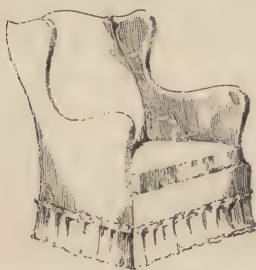
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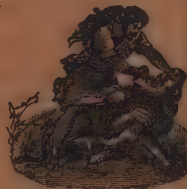
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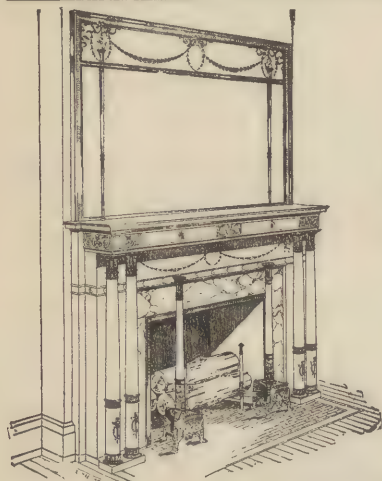
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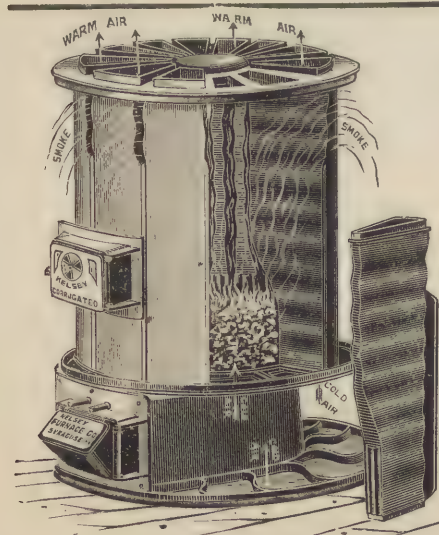
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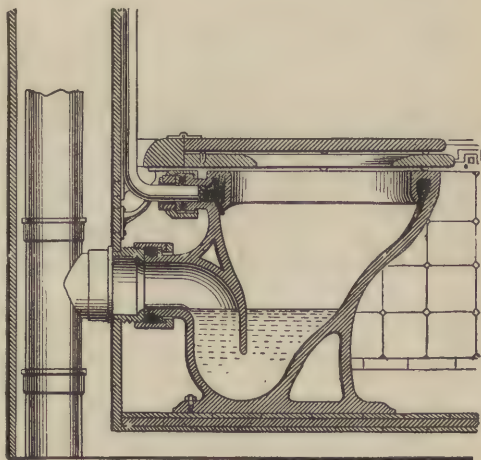
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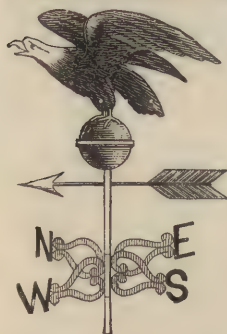
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The
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VOL. IV.

APRIL-JUNE, 1895.

No. 4.

THE MUSICAL IDEALS OF ARCHITECTURE.

Part II.

THE MEETING OF THE IDEALS.



THE aim of all art is to grasp and interpret beauty, and to impress upon its particular work certain human feelings, emotions and ideals. Sometimes the thought thus expressed may be of simple, hourly truths, sometimes of exalted imaginings. But that is according to place and circumstance and individuality of power.

Let us seek for a moment what are the relative positions of music and architecture in the pursuit of such visionary thought—visions though that are intensely real.

The æsthetic value of both melody and proportion arises from the harmonies which are produced under the influence of the emotions and the love of beautiful forms and ideas. The laws of rhythm and order are inherent in all natural organisms, and thus architecture and music are indirectly based upon nature, though their actual forms are creative or arrived at through instinctive feeling.

The life and harmony of nature are given definite and rhythmical shape and made ready for art in countless

ways: in air, in water, in every living thing. But this is material for the painter and sculptor to seek out and render, either very literally or with strong ideality, according to his temperament. There is a certain amount of musical impulse even in this. It is the record of what music the eye may discover.

But, beyond this, art discovers material fit to mould into languages. In them is expressed but dimly the life of nature, though vividly the mental and moral states of humanity; sensuous love of form if the work be Greek, craving for the mysterious be it Goth, craze for the insignificant be it modern. And this is done in forms that have no existence in nature, but stand for ideals, the expression of which she has left, as it were, to man; suggesting, perhaps, but not furnishing the model. The æsthetic nature, which, like love, penetrates by a sort of instinct into the heart of nature and of life, discovers, selects and organizes upon the principles, as we have seen, of order and harmony; and then, out of nothing apparently, springs into life a human art. This art is *music*. Music of the eye as well as of the ear—speaking in design as well as in figure.

It is not, in my belief, simply and en-

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tirely because of the mental satisfaction following the perception of parts aptly adjusted to the whole which renders certain works in building art, or in musical, valued of men.

With little plaster models of the Temples of the Acropolis at Athens, or the sumptuous monuments of ancient Rome, we may study and enjoy the grace of line and harmony of proportion which they possess. But the works themselves may yield us a higher pleasure—sublimity, poetry. In their presence we feel the power of human labor and imagination. They become a vision of life. The Greek himself is revealed to us in all his refinement, his natural purity, his love of light and of smooth, softly glowing form. Or the imperious Roman, glorying in his power, grandiose in all his work, yet betraying beneath a hard and cruel nature that prefers a vicious lavishness to any simplicity of beauty or desire. Were the histories of these races unknown their character would stand revealed upon the silent pages of their monuments.

Proportion, symmetry, fitness, are all essential elements of organic life, and so all works of art require them. Music or architecture without the power of harmonious construction could attain nothing higher. Yet these are comparatively but means. But to present these mere abstractions in such form as to convey what is lovely to the eye and precious to the soul—these, for each of them, are ends.

In the indefinite quality of their expression, as well as in their independence of nature, they are separated from the other arts. In painting or poetry may be accurately depicted the thoughts and actions and the heroic deeds of men. In music and architecture they are subtly hidden or symbolically told. This is at once a loss and a gain. For, with the diminution of the power of gaining precise thought, power to reveal the undimmed lustre of the imagination and the emotions increases. And the higher phases of painting and poetry depend upon the latter as much, if not more, than on the former.

Much that we are saying of the resemblance of architecture to music ap-

plies also to poetry, as far as the latter may be called literal music, adapted as a beautiful language to clothe natural imagery and imaginative thought; and exclusively of its literal descriptions of men and things.

It is, of course, chiefly in reflecting *man* that the powers of music and architecture are exercised. But, also, each of them reveals, by no means rarely, moods of nature to those whose sympathies and powers of association are keen enough to appreciate them. Plato remarks that music (he uses the word in a broad sense, as including all non-imitative art) "furnishes the most adequate imitation of nature," of the spirit, never the form. But before proceeding to notice further resemblance it may be well to examine some of the manners in which the ideals of music and design naturally differ.

The most marked divergence of form results, of course, from the fact that design must possess the feeling of repose and permanence, while the art of sound breathes the atmosphere of actual movement, flashes before you and is gone like a fire-fly. Yet what seems at first glance the most opposite conditions in the world prove, on closer scrutiny, to have an essential connection in laws and in ideals, though differently environed. This art of reposeful form is also, we should remember, one of *imaginative* form. It is not, to be sure, so purely and intensely a language of the feelings as is music. But the difference is rather in degree than kind. Form is highly essential in music itself. Any one studying these arts must have observed that in one as in the other harmony between *form* and *life* is ever necessary of achievement. Beauty is a many-sided thing. To unite the beauty natural to form—the beauty, that is, which the instinct or rhythmical sense of the artist discovers in his material—with the beauty of his ideal is the guiding light that gleams untiringly before him. What sets their aims at material variance is the difference of emphasis, natural to each, upon these elements

This must not be lost sight of. Thus, while music is by nature prone to impress one with sadness and pathos,

and readily expresses passionate love or hate and other sudden and swift emotions, architecture lends itself more naturally to the expression of vastness of mind and the multitude of material things, of quiet happiness and peaceful desire, of enduring power and law. But, at the same time, repose should not be taken for mere inertness; thought is change and movement. The transformation of mechanical to truly plastic and beautiful form is wrought by the presence of the spirit of life and harmonic organism. Rhythm, and what Professor Waldstein calls the "flow of form," are not the concerns of sculpture only, but of all abstract design.

It has been rightly said that those ideas which are best expressed by motion and time should be given exclusively to music and poetry, while those fitted to space and repose should take shape in architecture and other arts of space. But I think this axiom may, in confusion of the motives of form with its special laws, be taken to include more than is just. Forced imitations of effect that belong rightfully to another art are, of course, reprehensible. But all architecture is, in a degree, naturally emotional, and some, such as the Gothic, extremely so. Imagination is the word more usually and properly applied to form, and emotion to music. And while there is some difference in the meaning of the two they are also inseparable.

Architectural impressions are often made slowly. A great building grows upon one. It can seldom take the senses so by storm as a grand musical work so frequently does. But then it does not leave us with the suddenness of the conclusion of an opera or concert. We may return to it day by day. Patiently it awaits whoever will pause to learn and enjoy.

The voice of architecture is subjective, but it is a voice. Music itself is not concrete thought without poetry or words. To many the noblest works of music are so much meaningless sound, as in the loveliest buildings they see but piles of masonry. But no one who has any appreciation of the beauties of architectural forms will deny that

imagination and the more permanent elements of the emotional states of mind have found abundant expression and symbolism in formal and plastic design. The fervor and purity of faith, the power of intellect, the dignity of state, the vanity of wealth, the festive pleasure of a happy people, the monk's love of heaven, the pagan's love of earth!

Not that her only glory is in borrowed plumage, nor that the sole artistic element of the arts of form depends upon evidence of emotional thought. On the contrary, supposing we regard the intrinsic beauty, so to speak, of form as the most excellent quality, we are brought then to the most tangible point of union; for the paramount power of proportion and harmonious ordering which we here admire is musical form itself. As for the musical and poetic spirit, we think it is more intimately interwoven with the architectural than is often supposed. All three are wandering fauns in the same mystic wood, of whom we ask for stories of what they have there seen and heard, what fairy fancies caught, what softly whispered secrets from nature weaned. The tale of one of them, who has gazed with finely sympathetic eyes, is filled with peaceful charm, with the light of human power and the majesty of that which is immutable. The other two, with sweetly flowing words or deftly fingered lyre, speak of great actions, summon wind-tossed passions and awake the fire of inmost feeling. Thus much does the spirit of their interpreting differ. There is no such thing as making a comparison of their relative artistic merit or value, whether expression through musical movement or plastic repose be of the higher order. To observe their similarity and variance of aim does not infer any such attempt.

What Walter Crane says of pattern may be applied to all art of abstract design: that it is "the notation of silent music. * * * 'Here is sound,' says the musician, 'let us make music.' 'Here is surface,' says the designer, 'let us make pattern.'" We may add: here is space and structure, let us make architecture. Frederic Schegel called architecture "frozen music." It is

music in space, impressed therefore with the character of repose.

The designer has, like the musician, to create, to perceive the spirit of nature where she becomes silent. It is the same spirit that speaks in dome or in chant. Style in these arts is developed very gradually. Social forces beyond number influence their growth.

It goes without saying that these artistic forces of architecture must always act in concert with systems of construction and demands of utility, and is limited by them. The evolution of the latter has great influence in bringing out many characteristics, and when, therefore, we speak of the power of the æsthetic sense as creating architecture, we do not intend to infer that it may do so independently of the laws and developments of structure.

Yet, at the same time, any one may observe who will take the trouble to sift the question that in any style-producing race, the *motifs* of design, which, of course, proceed from the truly characteristic art ideals and mental tendencies of that race, are always in natural accord with the unavoidable suggestions and limitations of these same structural and practical forms and lines. Utilitarian experiment and discovery does not of and by itself produce styles in ornament and design, nor does the æsthetic invent structure. Those two distinct types, the Greek and the Mediæval, each display a smooth working together of the climatic and material conditions, with all that we may include under the term of the *mentality* distinctive of the epoch. The natural art impulses (only, we repeat, in style creating periods) find instruments as sympathetic as though they had been deliberately chosen, instead of thrust upon them. This being once recognized, the æsthetic side may, without objection, we think, be analyzed without pausing at every turn to see how it is especially influenced by structure and use.

One of the most valuable results that might follow a more general appreciation of the truth that the basis of architectural design is in an application, largely unconscious, of the laws of natural and musical harmony, of which

we dealt in the preceding chapter, would, I think, be to influence taste toward pure design and increase the knowledge of its power in times past and its possibilities in the future.

Modern art criticism, for reasons which it would be out of place to discuss, has been fond of asserting that architecture only rises to the beautiful and to mental expression through her use of imitative arts. And, on the other hand, her own professors, while insisting on grammatical correctness of form, have lost the vital fire of the days of creative style. In the continual repetition of the motives of the ancients, the value of academic perfection has been evident, but the intellectual expressiveness of the old harmonic lines and forms has been forgotten.

Now, as I believe that the study of architecture in this comparative light argues strongly for the truth that abstract design may be full of human and emotional or imaginative power, and also that at its best it is a lifelike art and not a formalism: a glance at these aspects of design will be necessary to determine upon which principle this true musical ideal chiefly depends.

Music has in this age attained greater power and brilliancy than ever heretofore. Its emotional range and profundity need no pointing out. But coming to architecture we strike those laws of proportion, symmetry, orders and the like, which are looked upon by many at the present day as rather vague in their æsthetic derivation and capabilities. Yet why should their precision seem any less promising than that of bars and notes, intervals and fugues? And a different face is put upon the matter if we acknowledge them to be a particular expression of universal laws of music and nature. In the thirteenth century our present question would have been reversed. It might then have asked: could arrangement of sounds be conceived ever to acquire the range, the freedom of fancy, the depth of thought that is distinctly possible to architecture. Not that architecture can enjoy her full nobility with-

out the adornment of imitative art—of sculptured freize and frescoed wall, just as the highest type of music is only reached through a union with poetry and dramatic action. Yet, it remains, that in forms which seem to have no model in nature are awakened sympathies of the imagination; and there is found a musical art, a basis of architectural virtue, as there is an organism in the twisted branches of the grape-vine hid beneath the soft luxuriance of broad leaf and luscious fruit.

When buildings have nothing to impart of the sympathies and emotions on which art depends, as Ruskin unjustly complains is the case with *all* building which is ungraced by lovely ornament, it is because of an artistic frigidity on the part of the designer and of the conditions of life around him, not because abstract architectural design offers no opportunities for the imprint of artistic thought, or is alive to no human sentiment.

To say that in the Parthenon, in Amiens cathedral, in Salisbury, there is no art but in the sculptures, is to show incapacity to appreciate one of the most far-reaching (though at times neglected) powers of art. A Doric temple with empty metopes, a stalwart château with towers and battlements, sternly bare of decoration, a cathedral, distant a mile or so, where its sculptures appear reduced to flecks of light—these still impart impressions of beauty, of human might or tenderness.

But, on the other hand, something more than the academical point of view of form is necessary to bring out the full musical scope of design. Rhythm and harmony are qualities of nature and life—mental as well as physical—perceived intuitively by artistic minds. But some of the formal and empirical methods of Palladio, Vignola, the architects of Louis XIV., and of some modern academies of art are not natural, unless it be nature petrified—and therefore appeal only to the grammarian and not to the artist.

We would not have it for a moment thought that we admire disdain or desertion of the canons of style. At present this could result in nothing

but discordant and bastard structures. And in the past tradition played no small part, nor was it ever wilfully disregarded with success. But the difference is in this: that the noble styles, whose smallest acts we now reverence as immutable law, grew into form in a series of typical monuments, as temple or church; and all motives of structure, design and decoration centred about the experimental development of a great constructive form, which has been either column and lintel, dome, or equilibrated arches and vaults.

This dual evolution brought out the creative qualities of design. Every building advanced and perfected the style of the period in some degree. Variation was continual, though gradual. Life was evident in every branch of design. Artists lived in the present, and until the fifteenth century little study was made of the work of any time or people save that which was growing up around them. So it will be seen that their work was *naturally* harmonious rather than *scholastically* so, and that they enjoyed a chance to throw true poetry and originality into their productions, such as is lost or but dimly seen in the most faithful "revival." Of course, no architectural system was ever the invention of a single man nor even of a handful; primary motives result from great intellectual movements and developments of social systems. Individualities of emotion are therefore more pronounced in music than design. Yet even the severe lines of Greek buildings, designed chiefly to convey the placid beauty of form, are not without imaginative and sympathetic power.

So, while in periods of academic rule, the precision of musical form is expressed it is only in more creative epochs that the complete musical ideal is found. For, as in the art of rhythmical sound we observe this power of harmonious order becoming the voice of the most varied emotional impressions; so the art of rhythmical shapes, notwithstanding its abstract and mechanical rudiments, its demands for stability and symmetry, becomes one of man's emotional languages.

Poetry and painting can, to be sure, bring before us the loveliness of nature as architecture or music alone are powerless to do; but, with things human, they are of a current as deep, if not to-day (with architecture at least) as strong.

In the buildings of many centuries we may see man at war, at peace, at work, at play. We may see him barbarous and superstitious, joyful and ideal, proud and luxurious, grotesque and spiritual, and finally democratic and prosaic. In short, while it is more the mind than the passions that we find recorded, the art of architecture is an exponent, as is every art in some measure, of the innumerable phases of *La Comédie Humaine*.

In other moods of music or architecture, the significance of their forms is of comparatively little importance beside to the sensuous delightfulness of harmonious lines, or sounds, or colors. The other arts are precious, too, in these different ways, but the two we are considering possess that severe and unimitative quality, which, by its very restrictions, opens the way for the most finely wrought idealism, to which more literally interpretive arts can less perfectly attain.

The summary of our conclusion thus far comes to something like this:

The musical faculty and the faculty of design are fundamentally the same artistic power. This declares itself in the fact that the structural systems which each has adopted to express art thought are distinctly parallel methods in all their most prominent significations. They carry out their æsthetic purposes in common through means of harmonious ordering of their constructional forms or units.

This law of harmony is not the chance property of a particular art but a natural one of universal extent. Beauty being in part dependent upon form and part upon expression, which latter is a very changeable element, the standards of taste are relative rather than absolute. But certain broad principles of the intrinsic value of form and the distinction of beautiful from ugly, harmony from discord, or consonance from dissonance, may be estab-

lished; and it is found that these principles are of greatly similar character in sound and in form, both upon physiological and physical grounds. And the artistic structures reared upon this foundation, respectively by music and architecture, show strong resemblance in their methods of composition or design; which methods may be summed up in rhythm and melody, proportion and outline. While music has its systems of tonic-key and tonality, architecture has stability and arrangements in different planes, grouping for structural unity, and study of color harmony. The musician has grades of intensity to aid him; the designer commands grades of light and shadow. Quality of sound is for one what texture of material is for the other.

The relation, however, is more than a likeness of the *materia* of their artistic structures; there is an emotional and creative affinity as well. The power of each art lies in something apart from imitation of nature, and there are many points of similarity to be observed in the manner in which each hews for itself fair forms out of the rough unsuggestive blocks with which it finds itself supplied.

Furthermore, these abstract motives and methods penetrate the imitative arts and all art whatever, and in reverse manner they themselves require considerable aid from mimetic and pictorial art.

The beauties of form in plastic repose and of form born upon the wings of sweeping sound are in a manner opposite, yet are in touch.

This element of design which we call the "musical ideal," is, then, primarily, the just and beautiful ordering of parts and forms: as the giving of certain proportions, well studied in the relations of lines, intervals, etc., to a treatment, say, of arches and pilasters or to the general outlines of a building; or the disposing the acanthus leaves of an arabesque or the blossoms of a wall paper upon certain general and symmetrical systems of graceful, that is, rhythmical lines, instead of carelessly hap-hazard or with all the unrestrained nature.

But the musical ideal does not cease

there. It has concern with the motive as well as the law of composition. The most musical architecture is not, as might appear from the above reasons, the most formal. For, as it is because of music being an emotional language, that melody is made of value; so it is that the formalism resulting from the conventionalism of nature, which takes place in design, is prevented from becoming a merely mechanical proceeding and an arbitrary copying *in toto* of already acknowledged forms of beauty, because it may be elevated to a language of mind and emotion, expressed with an infinite variation of existing standards of beauty so that every work is a vital outcome of the artistic temperaments and sympathies of its time and of climatic conditions. Spontaneity of style gives an equivalent to the life and movement which are so necessary to music.

For such reasons is it that the architectures of Greece, the Ile de France, and Italy of Renaissance give the fullest expression to the musical ideals, which are possible of interpretation into form, and, for the same reasons, is it that our feeble or accurate copies of the work of those ages, in this dark age of design, can never equal their originals.

Architectural design, being an art of form, is, in its actual and visible accomplishments, more closely connected with the other arts of form, as painting and sculpture, than with an art presided over by another organ. But the nature of this union is like the meeting of two individuals upon common ground, who work together for the accomplishment of one result.

Whereas the union with music is more fundamental, so much so that it is not exaggeration to speak of it as *musical art in space*, and to say that design in line and form, as architecture, considering it apart from other motives of necessity which may have influence, is the creation of pure music in space.

Motion is supreme in the one art, repose in the other. Yet, as we have pointed out, neither is entirely sustained by one only of these forces. Each is carried into fields never visited by the other; yet, these fields are

but on the opposite banks of a little stream. And, withal, the speech of music is unconsciously spoken by design; through means of line and mass, light, shade and color instead of through sound. And, in this too oft despised language did the Greeks and the Mediævalists and the Florentines and the Venetians, with blocks of stone and lumps of clay and beams of wood as instruments create poems. As Wordsworth has said:

While with an eye made quiet by the power
Of harmony, and the deep power of joy,
We see into the life of things.

III.

Historic Parallels and Reflections.

THE first indications of the art impulse in man may very probably have been in joyful or woeful acclamation—in rudimentary music. But, though possibly the first art to have an actual beginning, it was by no means the first to reach a high stage of development. It was a long time before any one sought to discover her æsthetic and technical laws with sufficient energy to produce anything worthy of being called musical art.

Architecture preceded all the arts in its growth, necessity urging it on. Many truths which each art has in turn expressed were first discovered and propounded by architecture. Music, being almost free from practical requirement, was the last to reach maturity.

Architecture retained this lead, and so the music of to-day is giving expression to conceptions which received form in architecture five hundred years ago.

The dawn of musical composition was probably in chants and war songs. In these a rudimentary idea of metre is developed. The construction is limited to an uncertain amount of division of the lines and words of the song into long and short intervals, and to accent or stress laid upon notes or syllables with more or less regularity.

The germ of architecture is in the feature analagous to the metre, the *line*, and in the discovery that useful

objects could be made pleasing by giving certain shapes and quantities to their component parts: *i. e.*, study in line. The first efforts in design were most likely in the shaping of pots and urns and handles of weapons. The first step in architecture is in juxtaposition of large and small forms, horizontal and perpendicular lines. Thus the Celts placed long, upright stones in the ground and balanced a large, flat stone upon a small one. Next, the savage arranges a succession of approximately equal uprights at fairly equal intervals. This same step is marked in music when the notes become divided into groups of equal duration. As yet, though, the complete idea of rhythm and proportion is lacking. The principle of order is established but there is no organism. But when, together with accent and time, the idea of systematic grouping enters and the accents become grouped into musical phrases; and when a lintel is set across the top of the upright stones and, furthermore, in pursuance of structural suggestion, the shafts are given cap stones to receive their load and the entablature divided into parts, then the structure has become an organism, and proportion, in its elements, at least, has been thought of. The study of the relative dimensions of the parts and the beauties of curvature and shadow follow naturally. The history of primitive ornament is the record of the development of pattern (rhythmical arrangement) from a mixture of naturalism and rude convention in carvings and sketches of human heads and figures, sacred animals and plants.

We have little knowledge of the nature of music prior to the days of Greece, nor is very much known of it even then. The general character of the music of the pre-Grecian civilizations may, however, be safely judged from that of peoples in a primitive stage of civilization to-day. Of such, the recent tenants of our Midway Plaisance gave every one a splendid opportunity to judge. There are certain general characteristics noticeable in all this barbarous music. It is recitative and declamatory, filled with pur-

poseless sound, lacking in real rhythm and modulation, and possessing instead a wild sort of continuance and monotony of key; all of which speaks little of joy or the lighter emotions, but much of sadness, of savage war, and of the fear that disturbs the awakening mind as it feels the presence of the Unseen.

Such also is the character of primitive architecture, as the Egyptian. It is possessed of the same gloom and monotony. Vast, ponderous, and oppressive, lavish in its expenditure of force, but with the sense of proportion and delight in form undeveloped, barely existing.

The wearisome cadences of the child of the desert to-day, take one back at a leap to the monotonous stretches of columns and leveling entablatures of Karnak. The want of melody in the one corresponds to the lack of proportion in the other. The idea of harmonious ordering is weak in both.

Turning to Greece, we see on every hand the work of a finer, a more beautifully ordered mind. Here is design most lovely in conception, most pure in execution. An epitome of the progress of musical forms from barbarous to classic civilization is furnished in the transformation of the Egyptian colonnade wrought by the Greeks.

In the first place, the Egyptian extends over practically unlimited areas, whereas the Grecian is confined to a peristyle for the temple cella, and being surmounted by the gable roof is exactly defined and unified thereby. A Gregorian chant or the droning recital of the Oriental may extend over any length of time, but a true song has beginning, middle and end.

Furthermore, as to modulation, the Egyptian entablature and in fact all their work is flat. What projections there are, are abrupt, without gradation. The only curves used to any perceptible extent are the cavetto and torus of the cornice and the lotus form of the capitals. But in the Greek entablature the architrave is separated from the frieze, the cornice breaks out boldly, but with solidifying members, from it. The pediment sets back again upon the frieze line. The slanting

plane of the roof modifies the severity of the contrast between the series of columns and the horizontal entablature, as the mouldings of the capitals do between each individual shaft and the architrave. The cornice has a broken outline of gradated parts. Curved members, which become more numerous as the Doric is supplanted by the Ionic and Corinthian, carry out still more perfectly this gradation and modulation in the matter of shadows as well as of lines. In the exquisite ordering and modeling of detail, in which lay the artistic solution of the constructive problem of post and lintel and gable roof, something has dawned which did not come to music until centuries later. But these motives of complex harmony are held in strict restraint. The temple as a whole is a rhythmically proportioned unit. Its separate parts succeed each other and repeat horizontally without interference and singly rather than in group.

The Greeks insisted on predominate symmetry in architecture and rhythm in music. They developed rhythm on the same ideal as they did proportion. Their music was exceedingly simple as compared with ours, but they advanced a great step in developing melody as an accompaniment to the rhythmic dance. This is the most prominent motive of their musical work. Simple measures and melodies were created, but harmony, in its technical sense, though known in principle, was but little investigated. It was contrary to their ideas of the true path of music. Plato reveals one of the fundamental art ideals of his people when he says: "Simplicity as to music creates in the soul temperance." It is in natural accord with Greek taste to find them pre-eminent in the feeling for the mathematical relations of proportion—severe yet never obtrusive—of which we spoke in an early part of this essay.

In the scientific planning for acoustic effect, of their open-air theatres, including the placing of vases, so shaped as to sound, each of them, a note of the scale, and which acted as resonators, increasing the powers of the voice, all of which is described by Vitruvius, it may be seen that the Greeks had a

practical knowledge, whatever their theory, of a connection between the properties of sound and geometry.

The great dependence placed upon the intrinsic value of rhythmically disposed form is echoed by a kindred spirit in the classic modes of music. Form in either is at once grave and joyous. Always human, but never voluptuous or intense in emotion.

Greek design possesses symmetry but not accent or balance in the leading motives and masses of composition as does later art. Just such is the motive of rhythmical chant or dance chorale and simple melody. Their music was innocent of counterpoint; and, except for one important feature—the pediment—their architecture was equally simple. The Greek order is pure melody in space as the dance music was pure melody in time.

The end to which the architectural form, the ideas which it sought to express were the same as in the music of the day, viz.: an extremely pure, reposeful, yet sensuous form that would express the external beauty, the rhythmic motion of natural life, especially as revealed in nature's highest type: Man, in a state of free and healthy happiness.

Thus, then, are Greek architecture and music related both in spirit and form.

Rome was rather a borrowing than a creative period, artistically. But some of her decisive departures in constructive systems—the introduction of arches, vaults and domes in conjunction with the motive of the colonnade—opened the way for consistently expressive developments some centuries later, when the turmoil following the fall of the Empire had subsided.

Byzantine architecture was, at its birth at least, full of character, but the age produced no music sufficiently typical to furnish material for a comparison.

Passing them at once to the full-grown style of the middle ages, the thirteenth century Gothic, we find ourselves before a distinctly new system of structure and design.

We observe in architecture a loss of the breadth and tranquility of Greek

design. In place of the simple structural motive of column and entablature there appears a complex system of equilibrated forces. The section of any typical structure does not show one gable only, but a group of gables leading up finally into towers. Several systems of lines and planes, balanced and harmonized, confronts us in whatever direction we study the design.

The Greek pediment gave the first intimation of such motive. But the taste and temperament of the Dorians and Ionians prevented it from becoming very assertive. In Roman buildings, such as the triumphal arches, the *thermæ*, and the Pantheon type, the harmony of contrasting forms is more avowedly dealt with. The culmination is reached in the Gothic church where whole naves, apses, and towers are used as groups. The evolution of the ribbed and buttressed vault has resulted in the abolition of extensive wall surface and the long horizontal lines of cornice and entablature. But, though these necessities of the classic taste have been disregarded, the feeling for proportion and balance in Gothic design is extremely fine. Unity is attained, however, through a much greater perplexity of lines and surfaces. The flying buttresses lead the eye upwards and inwards from the protruding aisles and chapels through the clerestory to the soaring lanterns and spires. Inside the repeating vault cells are broken between nave and choir by the great arch of the transept, and the whole series of equal bays is brought into harmony as one mass with the opposing mass of the transept.

Rhythmical succession of forms has developed into the harmonizing of groups and masses.

Of such design is the harmony of many sounds and many voices, and such in fact was the character of mediæval music.

The height of the Gothic period saw music but little advanced from her classic simplicity. However, while all the various interactions of Teutonic and Frankish ideas with the Roman and Byzantine survival and with growing Christian ideals, were centering in the production of the consistent "Gothic"

architectural form, a similar, though less vigorous movement took place in musical composition. Harmony, fugue and counterpoint had then their beginnings, and their rise marks the division of modern harmonic principles from the single motive of classic rhythm and of Gregorian chant. Gradually these new principles worked a transformation of the plain chant, the *chausan*, the folk song; a change that resulted finally in the symphony, the oratorio, the opera, and the music drama. But the movement was slow. The music of the church did not culminate until the sixteenth century with Palestrina and his followers, three centuries later than mediæval architecture touched its zenith. By the twelfth century architecture, especially in the larger French cities, had freed itself from the domination of scholastic formalism and was left at liberty to express the symbolism and ideals of the church as artistic impulse led her to do. But music was still fettered by scholasticism, as architecture had been in her Byzantine and Romanesque periods and became again in the later Renaissance. The Italian Renaissance was, as regards church music, not a revival but a continuation of growth, a quickening of spirit and a deliverance from formalism such as had been accorded to architecture in the heyday of mediævalism.

The exclusively polyphonic character of music, which was scarcely broken until the appearance of the genius of Bach, is almost classic in its platonic "temperance," as compared with the profound instrumental compositions that have followed. However, the technical means of fugue and counterpoint are quite unclassic and are entirely similar to those qualities of design that pertain in the even more elaborate composition of the Gothic church of equilibrated forces and forms contrasted with one another and subordinated to large and simple motives. And, being practically limited to the writing of accompaniments for the voice, or rather voices, rhythmical division and repetition is kept in the foreground, and thus the relation to form is more distinctly held than it can be to purely instrumental work.

Still, not until the last century did music reach a point of development which seems to equal the variety and fullness of æsthetic expression of Gothic architecture. In short, the periods of "classic" and "romantic" ascendancy in the two arts have not entirely coincided.

The symbolism of the mediæval modes was, of course, largely the same as that which made possible the Gothic vault and spire. The chants and masses of Palestrina, sung in the Gothic church, so accord with the impression and complete it that it seems as though the stones had found a voice.

Italian church music is as spiritual and as replete in fine ideal as the monastic and cathedral architecture, except that the latter had attained a fuller command over its materials. Music has the advantage of being able to display particular moods, while architecture must be content to create a permanent and often more indefinite ideal. Now it is the *gloria in excelsis* which rises exulting; now the *popule meus* and the *miserere* that linger mournfully. But the Gothic fabric in stone breathes a spirit of harmony and soulful power, wrought out through such a complexity of means that it can only be compared as an art work to the modern symphony. It is barbarous, to be sure, and far more archaic than the Greek in matter of rhythmic finish and grace; yet it is a grand harmonic work, with all the soul of a Beethoven or a Wagner. There was something of the humanistic spirit, too, in the Gothic architecture which the other arts did not feel until the Renaissance.

The best of the eighteenth century church music, as the masses of Haydn, Mendelssohn and Beethoven, occupying as they do a sort of middle ground between the old mediæval polyphony and the extreme modernity of the symphonies, may also be compared in a measure to the spirit of Gothic building art. In the architecture of the early revival there was a great abundance of life and independent thought. Study of ancient monuments created a more refined knowledge of form.

Music pursued its way onward

through the Renaissance with steady pace; but architecture had already passed through a whole cycle and was declining. So this period came to her as one of revival and regeneration. The cinque cento was a time of brilliancy, of charming originality and graceful adoption—a time when the purity of plastic and graphic form was keenly and universally appreciated.

The sunny imagination that penetrated to every corner of Italy at that happy moment drew forth a profusion of charming and enviable designs in plaster, metal, stone and pigment. It is in this Renaissance architecture and ornament of Italy that we naturally seek the most perfect embodiment of the pure musical ideal—rhythm and melody, prized for their innate and inexplicable loveliness. Purity and beauty of form were esteemed above all else; and therefore all designs of this time display, in symmetry and matchless proportion, a rhythm at times little inferior to the Greek; and breadth, accuracy, well-studied repetitions, spacings and groupings reveal a melodious power unexcelled.

However, while the melting away of the haze of mysticism and the breaking of the hierarchal unity were attended by much that was beneficial, it lost to architecture the opportunity of creating such grand and soulful monuments. Throughout mediæval architecture runs the fire of the most emotional music, while with the Renaissance come the refinements of rhythm, the sweetness of melody, the dignity of drama and pageant; it is the spirit of ballad and the opera. It is a transition from organ and harp to flute and violin. The one is Dante, à Kempis; the other Spenser, Keats.

By the sixteenth century the bloom had faded. Expression becomes too much sacrificed to rule. The classic spirit is lost in formalism.

The graphic and plastic arts had by that time risen to such increased power of expression that they disdained the comparative obscurity and restraint of serving architecture as they had always done, yielding her their best thoughts in tributes of lovely decoration. This was a loss from which archi-

ture has most keenly suffered ever since.

While the Renaissance was a period of most marked musical motives, we cannot claim for the style as an objective whole any such clear and single type of musical form as for preceding styles. For one thing forces were becoming scattered and independent. Then, though the humanistic influence affected music as it did everything, it found a very young art instead of a mature one to work upon; and, as music was not in a state of decline as was later Gothic architecture, there was not the same force of pagan and classic revival. This was not entirely lacking, however, as the history of the birth of the oratorio and the opera evince.

Music did not find her full power until the eighteenth century, and by that time the actuating forces were quite different from those which had reigned in the days of the Medicis and the art-loving pontiffs. Music, therefore, took a different form than it would probably have done had it been ripe for a burst of genius then. The great features of the Renaissance movement are, of course, discernible in eighteenth century music; but these penetrate all branches of art and learning and are, therefore, more general than those we are seeking.

Then, too, neither the architectural nor the musical forms were longer confined to a few distinct types and systems of construction. Reverence for and imitation of the ancients made the expression of original types very vague. Personalities became more marked, though the individuality of the craftsman and artisan disappeared, and are much to be regretted; but the independence of the designer, notwithstanding his revival of details, was, for a while at least, very strong.

As the grasp of the academies became firmer and firmer upon architecture, music began to feel the strength of a divine power within her.

The works of the modern composers in independent instrumentality far surpasses the many-voiced harmony of the Italian church music in all but the fervent purity of faith. The noblest

phases of emotion find expression in the modern symphony and kindred work. The most subtle harmonies of color and atmosphere have been grasped by the modern landscape school which has grown up since the Renaissance. But architecture in the meantime has seemed content to become simply a formal profession and a commercial commodity. Why should the evolution of architectural form cease with Palladio or Bernini any more than painting with Le Bruu or music with Cherubini? Architecture was in advance of other art; but has Browning or Swinburne written the last true word of poetry, or Mouet or Vereschagin given the last touch to painting, or Wagner or Schuman brought musical invention to a close?

Architecture may never again, certainly will not for a long time to come, produce a radically distinct and thoroughly logical style: as distinct even, all things considered, as Italian Renaissance from the Roman Empire. Yet only in progress is there life. It must be acknowledged that under present conditions and environment it is a difficult task to design anything good which is not but a slight departure from some old time creation.

This is but natural, as styles can not be invented, but must grow: and architecture has grown but little, as regards development of style since the sixteenth century.

Splendid progress has been possible in music in this age, but architecture has felt more harshly the inartistic side of democracy and commercialism. The supremacy of utilitarian motives in modern affairs has had the unfortunate effect upon the noble art of architecture of robbing it of all freedom of production and progress, which would interfere with the practical business values of ground inclosed. No wonder that she has become superficial and eclectic in spirit. Building for the expressing of ideas and for the love of the beauty of form is a matter not one in a thousand outside the "profession" have any thought of. The creations of the Athenians, the Romans of Augustus' day, the Abbots and master-masons of the middle age, the Italian

artists of the Renaissance are repeated piecemeal in shop fronts, exchanges, and what not; but the fine knowledge of proportion, the instinctive power of design is only to be found occasionally and then it is comparatively feeble and uncertain. And where this light does burn there are many bushels ready for it to hide behind.

It is to be hoped that there will some day be room for the revival and practice of the old systems of proportion and design: that the spirits of Bramante, of Serlio, of Michael Angelo, and the rest, as well as superficial rules of tradition, may again be a strong force in art.

Tradition must be followed; but by keeping it alive, not by sterilizing it. Modern musical growth sets a splendid example of this spirit, and design has just shown a brilliant reawakening to it in the creation of the "White City:" since which it is clear that design is far from dead, though it is dormant and hampered by environment.

But what was possible in an ecstatic moment and with the unsubstantiality of a dream it would be quite hopeless to look for in permanent monuments, fulfilling the services of the day-to-day life of the present age. It is the character and impulses of this side of life which have always shaped the course of architecture. But, until a century or two ago, to whatever reasons we choose to attribute it, this did not prevent the art of design from freely developing upon its own artistic principle. So the Egyptians evolved a consistent, vital and monumental style, the Greeks another, and so on. In modern times, though, the only thoroughly novel types being those that have sprung from motives other than artistic, and even antagonistic, as our "skeleton" framing and proportion defying elevator systems of construction, it is useless to seek any particular points of union between the architecture of to-day and musical form.

However, looking from the other side, the higher developments of independent instrumental harmony, as in cantata or even symphony, which is distinctly a modern movement, may be

rightly said to have certain equivalents in the architectural form of other times. It is, though, as ideals of pure design throughout such work as the French cathedral Gothic, and such as produced the Court of Honor at the World's Fair, that brings modern music into relation with form and design.

To show a parallel of architecture as a concrete whole to a definite musical form, we must look to music as united to poetry or, at least, words rhythmically arranged, as in chant or to the dance. Such parallels we hope we have shown to exist between the Greek temple form and her melodious dance music, and between the mediæval form and the polyphonic chants and chorales of the church. Resemblances during the Renaissance and since, seem, for reasons given, to be less definite and contemporaneous, yet the oratorio and the opera have considerable constructive affinity to Renaissance design, as they, as well as the latter, began in attempts to restore classic principles and systems. The aria and musical accompaniment to dramatic action and dancing are returns to the ancient idea of music. Finally, in the lyric dramas of Wagner we may behold a return, not only to Greek ideals of the drama, as the composer sought, but also an unconscious revival of the motives which stirred in the brains of the great mediæval builders.

Much may be hoped for the future of design if the idea of the fundamental unity of the arts can be restored. Divided and specialized as to the extent they are at present they fly to extremes either of formalism or lamentable "originality." As Wagner said, thinking of his ideal lyric drama: "The separate branches of art could never aim to supply in any way the places of that all-powerful work of art which was only possible through a union of their forces."

Architecture has not been able to express the later day intellectuality, as has been the lot of music, if for no other reason, because of a more unkindly environment. Except as restricted by poetry and dramatic action, the musician may think in pure har-

mony, as it were, whereas, the architect may not build by simply conceiving lines and masses. Designers of other times were more fortunate in being able to turn to artistic account such novel constructive motives as time presented. In our time the suggestions to be derived from these sources are such that, handled with the logic and openness with which the Greek or the mediæval builder showed his construction, would annihilate all that is lovely in proportion, all that is melodic in form. So, shamming and masking real construction becomes the only reasonable course until some more malleable systems of structure are possible. Even this process demands a considerable amount of the faculty of design, though it is of a comparatively inferior order.

When, under a more favorable condition of civilization, architecture puts forth her strength and builds with some of the artistic spirit of Wagner, Gounod and the other great modern masters of music and music drama, who united lovely form and soulful ideas so intimately in their work ; when one may find in her lines some echo of the culture of the age, and not merely the condition and ambitions of trade, then will she be instinct once more with the power of the music of form.

Not that salvation is to be gained

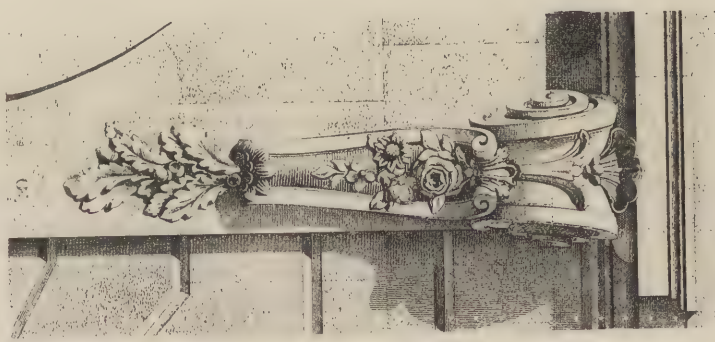
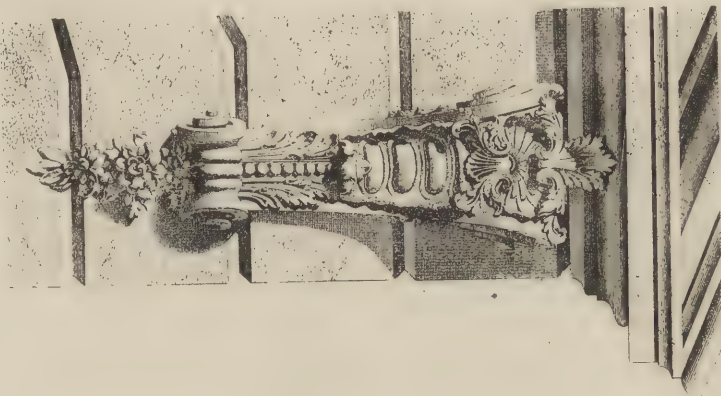
through wanton originality, innovation or disregard of our classic and academic standards. But, be we classic even in the extreme, we may rest assured that the more we seek sympathy and understanding in the soul as well as the exterior of the form we endeavor to perpetuate, the more truly and lucidly will we be enabled to use them, the more to fulfill the musical ideal, to which the architecture of other days gave natural and memorable expression.

With decorative art acting as formerly in concert with her purposes, and more desire evinced for monumental structures and more opportunities given to harmonize constructive and æsthetic motive, from which present styles have so far strayed, architecture would surely not neglect the power thus acquired through these dispositions, which are the marks of living style, but would again awake to a finer feeling of those profound harmonies whose concords her noble works in the past so unerringly struck, so beautifully fulfilled ; and would infuse into the refined beauty of Renaissance traditional form, the active ideals of modern art thought, which now find expression chiefly through music and the "music of the future."

With this day may come another Golden Age to light this aged world upon its way.

H. Toler Booraem.





CONSÔLS—STYLE LOUIS XV.

Paris, France.



KINMEL PARK, ABERGELF,

The late W. Eden Nesfield, Architect.



THE EARLY CHRISTIAN ARCHITECTURE OF ROME.

IF we look back in the history of Rome to the accession of Constantine, at the beginning of the fourth century, we shall remember that, though her prestige remained, influence and energy were long gone out of her. The seat of influence was the seat of military power, that is, the army; and the army was kept busy on the frontiers, where the barbarians were always harrying the empire, and especially in the East. The army had for a long time made the emperors; some of the most noted of them were provincials, of barbarian stock: Septimius Severus was an African, Diocletian an Illyrian; Constantine, born in Moesia in Asia Minor, was made-emperor at York. Rome had little to do with the empire except to live on it, and be its figure-head. The active emperors spent their time away from her, and some of them never saw her during their reigns; she lived in indolent tranquility, undisturbed except for occasional riots. Her population consisted of the old patrician families, who lived on their incomes, supported their troops of dependents, and gave the tone to the city; the tradesmen and work people, mostly slaves and freedmen; and the idle populace, who held themselves superior to the tradesmen and work people, and

lived on the largess of the empire. She had no stirring middle class; commerce was nothing to her. The city was finished, overbuilt indeed; no building of importance had been done in her for a century. Her art and literature, imported from Greece, were decadent, and given over to the lifeless imitation of old models. The Senate still sat and legislated perfunctorily; its only duty was to pass the edicts of the emperors. Rome was the stagnant home of old traditions, old customs, old ideas, and old superstitions. She was full of an overweening veneration for the traditions and memories of her old greatness, and closed to the ideas of progress with which the world outside was already fermenting. There was a considerable body of Christians among her people, chiefly among the slaves and freedmen, it would seem; some of them were prosperous and even wealthy, and beginning, in the cessation of persecution, to let their worship appear, and to build churches for it above ground, but outside the walls. Yet few persons of influence were among them, and they were looked down upon by both the patricians and the idle populace.

Rome was pagan, and pagan she remained even after Constantine, in her ruling spirit. The patricians were slow to accept the Christian religion at all, and clung to their old worship, at first

publicly, afterwards secretly, long after the official religion was established. Julian the Apostate, half a century after Constantine's conversion, only gave public expression to this smouldering paganism when he tried conscientiously to bring back the empire to the worship of its old gods. This was a part of the ineradicable conservatism of Rome, a conservatism which fairly matches that of her later years. Even among the lower classes, who formed the body of the faithful, the superstitions of the old worship lingered almost unimpaired for many generations; the worship of saints took the place of the cult of nymphs and fauns; the Christian festivals were set designedly on the days of heathen feasts, and it is curious to note how many popular superstitions which have survived in Italy to this day, and from her spread through Christendom, are clear survivals of the superstitions of pagan mythology, such as the evil eye, the sinister meaning of omens seen on the left, and a hundred common signs of good luck or ill.

As she was pagan, so she was classic. Her art was interwoven with her religion, interpenetrated by it, shaped by it and by the traditions which came down with it from her early history. That her conservatism should show itself especially in art was inevitable. For the gospel which was to work a radical change in the moral and social order of the world had no direct message whatever for art. The Church took her art where and as she found it. The only change she made in it was by the introduction of new symbolism, and even her characteristic symbols were in great part the symbols of the old worship invested with a new meaning, which may or may not have been discriminated by the multitude of believers. Thus the emblem of Bacchus became one of the cherished emblems of Christ, by his own authority, and the amorette which sported among the vines on the walls and vaults of the imperial palaces continued their gambols unrebuked in the name of cherubs on the vaults of Sta. Costanza and on the Christian sarcophagi of the fourth and fifth centuries.

This obstinate conservatism of classic art has not, I think, been sufficiently recognized. So long as the art of Italy lasted it was classic. It is common to assume that the new religion brought a new impulse to art, and began at once to develop a new system of forms which grew continuously into the art of the middle ages. But the new art did not germinate in the West till the old had expired; and before this the greater part of Italy had been reduced by violence, disorder, impoverishment, pestilence, famine and depopulation, to a condition in which art was the last thing to which her wretched inhabitants had attention to give. It was the destroyer himself who lifted her out of this condition, and when she rose again it was not only to a new social order and a new art, but practically with a new population. It was not to the new religion but to the new blood that art owed its regeneration.

It was in the East that the barbarians began to overrun the empire. There they did not annihilate the social and political order as in Italy, but rather were absorbed and transmuted by it, till in the end they may be said to have absorbed it. This process was going on before Christianity became the religion of the empire. As order and government did not perish in the East, but were gradually transmuted into new forms which suited a new people, so it was with art; and the art shaped by this process of transmutation retained in the end much more of classic character than in the new German kingdoms of Italy, where, when it grew again, it grew *de novo*.

To the East, there we naturally look for the connecting links that join classic art to Christian; but there these links are peculiarly difficult to trace, for they have been nearly obliterated by the later invasion of a later race, bringing a new and militant religion—a race which has not assimilated with the conquered people, and whose blood has rather curdled than clarified that of the countries which the Turk has overrun. But the great palace that Diocletian built at Spalato, the later churches at Constantinople, culminat-

ing in Sta. Sofia; the buildings of Theodorich at Ravenna, purely Eastern in style, and scattered survivals here and there, especially the singularly preserved series of stone buildings of Syria, give, when comparatively studied, a very convincing picture of the progressive changes of architecture in the East. It has been a habit to look on the East, including Greece after the loss of her independence, as the home of conservatism, given over to intellectual coma, and lost to progress. But though the later empire of the East stiffened into immobility and routine, and though after the Roman conquest Greece declined into artistic stagnation as well as political, yet in the brilliant days of the Roman dominion, through the reigns of the Antonines and down to the time of Justinian and later, the Eastern provinces were the focus of the energy and progress of the world. While Rome lived in idle indulgence on tributary wealth, the busy cities of the East created that wealth. The ruins of Asia and Syria show their astonishing prosperity and prove their continual progress. The exceeding refinement of form and fastidious adjustment of detail that belonged to the Greeks had been gradually lost, as was natural when the consecrated forms, refined by two or three centuries of consecutive study, came to be modified or supplanted; yet, if we may trust De Vogüé's plates, the detail of architectural work done in Syria from the second or third century to the seventh was as clear-cut and well-adjusted as any except that of the very best times—of the fifth and fourth centuries B. C. in Greece, the thirteenth in Western Europe, or the first two centuries of the Renaissance. It is not fair, I think, to speak of the first Christian centuries as a period of general decadence in architecture. In some respects a great change had come over architecture and the spirit in which it was designed. Though the exquisite sense of the Greek architects for proportion and for refinement in detail had decayed under the Romans, the period of Roman formalism was passed and a

decorative spirit had come in which, if it lacked the perfect grace of the old Greek and was over-exuberant, as some of us would say, was yet full of freshness, vigor and invention. It could not easily outdo, I suspect, the richness of pure Greek art, which was more sumptuous than we are apt to imagine; but it substituted an opulence of superb material, a wayward freedom and exuberance of form, and, especially with the development of mosaic, a profusion of colored surface-decoration that outshone the splendor of the earlier time. The technique of architecture, apart from the finish of its workmanship, had in some ways greatly advanced under the Romans, and it continued to advance. The squared masonry and simple lintel construction of the Greeks, unequalled in its kind, had been replaced by a complex system of arches, vaults and domes, with a carefully lavish use of rough material, cased in wrought stone or marble, carried to a gigantic scale, with unexampled grandeur of effect, and building structures of a complexity, size and audacious conception which even the nineteenth century shrinks from attempting. The technical advance by no means stopped as the splendor of the empire decayed after the period of the Antonines. The steps of the succeeding development are not clearly traced, owing to the disappearance of the buildings which should have shown them, but the monuments of Constantine and the more fully-developed architecture of Justinian show a transformation that could not have come of a sudden change—a thing which never happened in architecture till in modern days fashion got its hand upon it—but indicate clearly a continuous modification, some phases of which, at least, are still to be seen in the architecture of Central Syria and in scattered monuments that survive elsewhere.

So, while Rome was decadent; and art was decadent in her, architecture at least was not only alive but in some ways advancing in the East. Constantine's great predecessor, Diocletian, when he withdrew from empire retired—if it was retirement, to move nearer than his capital to the centre of all

activity—to his native Illyrium, and there built the great palace which is our record of the progress of architecture up to his day. I say up to his day, for the changes shown in it can hardly be the sudden efflorescence of that one building, but must be in the main examples of what was going on in the current of contemporary progress.

The palace, surviving in isolation, can not have been the only practising ground for such great innovations as it shows us. We find in it not only that direct imposition of the arch on the column for which it has been specially called into notice, but the continuous wall-arcade, the corbelled column, the razeing of the entablature almost to a stilt-block, precursor of Ravenna and Thessalonica, the bending of the whole entablature about the arch, as in Syria, the plate-band, the arch carried over a lintel and cornice without impost or pilaster, all these are not signs of a sudden impulse due to a great opportunity, but rather, it would seem, are part and parcel of a consecutive development in the art of architecture. If we turn to Central Syria, we find in the early churches, as old as Constantine or older, the basilican form well established, the nave and aisles with bordering arcades, the round eastern apse flanked by two rooms like sacristies (the prothesis and diaconicon of the Byzantine churches), the clerestory, and the narthex across the front. In the great church, or rather quadruple group at Kalat-Siman, built, so far as we can make out, only about a century after Constantine's time, we see the clerestory beset by a range of corbelled columns carrying an upper range of corbels on which the roof-trusses rested, an apse surrounded without by ranges of like columns running up into the arcaded cornice, a projecting triple-arched porch with three gables crossing the front, and three eastern apses, as in a Western church of the twelfth century. The one feature wanting to the Syrian churches is the transept, as is natural in these small churches, intended either for monastic use, or for small congregations, and

for the celebration of the service by a small number of the clergy.

If we look at the architecture of the church in Italy in Constantine's reign, taking this as a conspicuous period rather than as the epoch of a great architectural transformation, we shall find architecture well advanced in the transition from classic forms to those of the Christian Church. We shall have reason to believe that the transition was accomplished in the East rather than in Italy, and that it was a deliberate, consecutive development of architecture apart from its special uses, whether secular or ecclesiastical, although certain definite forms of buildings had been evolved for the special use of the church. The indications are that the transformations were the work of the same Greek people who had invented or shaped the classic architecture itself. By this time, apparently, the colonnade and entablature had generally gone out of use in the East; and under the guidance probably of Greek artists the arch, which Greece had refused in the days of her first architectural glory, was taken where the Romans left it, and made the dominant and controlling element both in design and construction, lifted from servitude to a regal position which it kept through all the middle ages. It is likely that Constantine first brought the new architectural forms into Rome—perhaps they had as yet no place in Italy, for there is no indication that there had been any call for new architecture in Italy for some generations—and that it found there an uncongenial home.

The kind of church which Constantine built, and which his successors perpetuated, must have been developed in the East, though it differs from the smaller churches which we have just noticed in Syria. That which Paulinus, Bishop of Tyre, built, as Eusebius describes it, so far as we can understand his description, was substantially of the same type, and Eusebius does not stint his words in describing its splendor. Tyre was at this time the most prosperous city of Syria, and the church had been important there. In many cities of Asia Minor the

churches were prosperous from the first centuries, and as they gained in membership and wealth, where they were not under a ban as in Rome, there was every reason for providing them with buildings of size and importance. The prominence of the early churches, the complexity of organization which they soon developed, the growth of ceremonial and ritual, all testify not only to numbers but to position and wealth. There is a significant edict of Licinius, Constantine's rival in the East, which orders that men and women shall enter their churches through separate doors, and which, whether or not it testifies to their orderly ways, indicates considerable importance in the communities which were so disciplined by imperial edict. It probably points to an order of which the need had come to be well recognized, and which finds its recognition in the plans of the basilicas of that time, that is, the separation of the sexes among the worshippers.

I shall not go into the question of the origin of the Christian basilica: it is long, intricate and difficult. It is enough to recall that secular basilicas were common in Rome, that they existed and were probably abundant in provincial cities, and that there is no record of the conversion of any civic basilica to the use of the church; but that the ecclesiastical basilicas were developed from them is clear. Constantine built basilican churches both in the East and the West, and the type was naturally the same, though there are indications of certain significant differences. One of his first cares was to redeem and reconsecrate the Holy Sepulchre. There had been, we are told, a systematic attempt of the pagans to obliterate it by covering it up with earth and by building a temple of Venus over it. The temple must have perished, for it needed supernatural intervention to enable him to find the sepulchre. He restored it and built over or about it a splendid basilica. It is not easy to fully understand Eusebius' description of this, owing to our ignorance of the meaning of the Greek technical terms—an ignorance in which possibly the pious had a share—but it

shows plainly enough the principal points: first, toward the east was a great atrium apparently inclosing the sepulchre, with porticos on three sides; then, facing the east, a porch and three doors; then an inner vestibule; and, then the body of the church, "built up to infinite height, spread out to immensity in length and breath." The splendor-loving Constantine would have it as magnificent as became the place where the head of the church was laid, now that so much magnificence was gathered about the shrines of his followers. In his letter of instructions to Macrinus, Bishop of Jerusalem, he orders "that all the churches which in every State hold the first place, shall be far surpassed by the dignity of this:" "for this place, which is easily the first in all the world, must be worthily set off with every adornment." So the church was to be built outwardly of smooth-wrought stones and inwardly lined with varied marbles, divided lengthwise by colonnades or arcades, covered with fretted ceilings of wood, and partly with vaulting, and ended in a western apse, surrounded with twelve columns typifying the twelve apostles. I see no indication of a transept in this description, but in another great basilica, which Helena, his mother, and Constantine built at Bethlehem over the place of Christ's nativity, as he thought, and which survives to-day, the transept is conspicuous. The plan of this transept, to be sure, is so unusual for Constantine's time, having round apsidal ends, that some critics have concluded that it must date from Justinian's; but the structure of the building is said to be evidently of one date; its style is so clearly that of the fourth century, and so absolutely not that of the sixth, that in the lack of any trustworthy record that Justinian ever built at Bethlehem, and with the support of the history of the building, which is unusually continuous, I think we must conclude with De Vogüé that this is the original building. It is a five-aisled basilica, divided by rows of columns which carry wooden architraves supporting the clerestory walls and the ceilings of the aisles. The nave has now an open wooden

roof; probably it was at first a flat coffered ceiling. Nave and aisles reappear, as it were, beyond the transept, the choir ending like the transept arms in an apse, so that the east end is three arms of a Greek cross. This peculiarity does not appear in any of the churches built by Constantine in Rome, nor in any of those which were modeled on them. It is at least possible that the plan of this east end, which is essentially three apses looking toward a common centre, instead of the usual single apse, is due to the fact that here the focus of interest is in that centre, where is the crypt that contains the birthplace of Christ. It is a noteworthy peculiarity of its design that, although the arcade had become fully established in its independence of the entablature—the great arcaded hall, so called, of Diocletian's palace is a conspicuous example—and though we may reasonably suppose it to have mainly superseded the colonnade in the East, here it is refused, and the columns carry an archirave.

Constantine's Roman basilicas differed essentially from this at Bethlehem in the arrangement of the transept. The three great basilicas, nearly contemporaneous, of St Peter, St. John Lateran, and St. Paul outside the walls were of one type—five-aisled, with large transept, and single eastern apse opening from the middle of it. They had in open porch across the front, and before it an atrium surrounded by cloisters. These churches fixed what may be called the Latin type, peculiar to Rome and to the small number of cities which took their precedents directly from her—except for the double aisles which were rare—and adhered to in Rome herself, with all that conservatism which I have ascribed to her, long after the progress of Romanesque architecture in Italy and elsewhere had altogether changed the type of churches outside of her. The type differs from that of the East, where the transept was not common and three apses were usual, where also the atrium was not so nearly universal as it seems to have been in the more important churches at Rome. The natural growth of the city has

obliterated it there in most cases; but indications of its existence are common. The transept was flush with the aisle walls, or nearly so. In the old St. Peter's, where by exception the ends projected considerably, they were cut off by screens of columns in line with the outer walls of the aisles, so that from within they did not seem to project. In some of the lesser churches the transept was omitted, as in S. Clemente, S. Maria in Cosmedin and S. Croce in Gerusalemme. The first of these three gives the best example that remains of the atrium of these primitive basilicas. Where that has disappeared, or was from the beginning omitted, we usually find a survival of it in the entrance porch opening with a colonnade or arcade in most cases, but sometimes overbuilt and closed, as in S. M. Maggiore and S. M. in Cosmedin, and serving as a narthex.

It is not worth while to dwell on the details of these churches, which are pretty well known to architects, but I wish to emphasize two points which seem to me most characteristic, and which illustrate more than others the pertinacity with which decadent Rome clung to her own ways, and let the progress of the world go by. The first of these is the adjustment of the transept to the body of the church, and is the thing which most characteristically distinguishes the Latin form of church or the Roman form. It is common to think and speak of all churches with transepts as cruciform, and to assume that the cruciform type prevailed wherever Christian churches were built. But the more precise and the better meaning of cruciform implies two members that mutually intersect, making four arms projecting from a centre which is common to both. In this sense the Latin churches are not cruciform at all; the cruciform church never prevailed in Rome till the Renaissance, and I have not been able to discover that it appeared there at all till the Gothic period. In the cruciform mediæval church the nave and transept penetrated each other, though by virtue of the predominating aspect of the nave and the uses of the choir, which occupied the eastern arm and the crossing

together, and often took in part of the nave, the crossing came to appear as part of the long aisle of the church, and the transept ends appeared like twin arms added to a continuous body. The plan of the Latin basilica was then not a cross, but a T, the apse being a mere excrescence on the transept. The relation of the two parts was very much like the head-house and train-house of a modern railway station. The transept did not consist of two arms fitted to a body that divided them but was the dominant member of the building, a continuous hall against which the nave and aisle abutted and stopped short, and which further asserted its dignity by lifting its whole floor above that of the others. The connection between these parts of the church was in Constantine's time not what the Germans call organic; there was not any articulated junction. It was as if the two members had been separate buildings; as if the nave and aisles had been moved up to the transept till their ends abutted against its side, and holes had been cut through for communication. I do not know that this architectural exaltation of the transept belonged to the Roman civic basilicas. Apparently the transept was not common in them, and where it existed it merely amplified the shape of the main hall. I suspect that its dominance was a characteristic of the Christian basilica, and it may well be that it belonged to great basilicas of the East, which have disappeared. The early Eastern churches of this form which remain to instruct us are for the most part without transept, but they are all comparatively small, and naturally would vary, like the smaller churches of Rome, from the plan of the great ones. The motive of the transept is obvious. It was to provide an ample and exalted position from which a great number of privileged persons, including the clergy, and doubtless the superior members of the imperial court, who could not be confounded with the mass of the faithful in the body of the church, might share or watch the services.

The architectural mediator between the transept and nave was the trium-

phal arch. It is best seen in St. Paul without the walls, where the primitive arch remains, spared by the fire which destroyed the nave early in this century. Here its impost is an entablature which is borne by two great columns, much higher than those of the nave, which stand out in the line of the transept wall. Occasionally its impost is continuous with the entablature or main string-course of the nave, as in S. M. Maggiore, but usually it asserts its superiority in an architecture on a larger scale than the rest, appearing only as a decorative feature of the transept, to enhance whose dignity is its chief office. This disposition of the church, while it served its purpose by exalting and in a way secluding that part which was reserved for the dignitaries, was an injury to the architectural composition. It is imperial in sentiment, and an echo of it still survives in the Greek church, where the priests do their office behind a screen, the Iconostasis, while the congregation waits in the nave. I say an injury to the architectural composition, for the nave, the original member, and far the more important in structure and effect, is degraded into a vestibule for the transept, which, for all its high function and the concentration of adornment about the centre, is in truth a mere cross-gallery. It is quite inferior in expression to the later form in which the nave is continued through to the apse, and the crossing appears as its natural climax, expanding upwards into a great central tower as in the fully developed cruciform church of the middle ages, or into a dome as in the Renaissance church.

But this was the type which Rome preferred, and to which she held with that conservatism on which I have dwelt before. From her example, apparently, it became the basis of that type which with more or less variation is often called the Italian type, in which the transept is still continuous, and bordered on its eastern side with chapels or apses, of which the middle one is simply a little more important than the rest. The type prevailed, I think, in provinces which were subject to the immediate influence of Rome, or were

more or less excluded from that of the German blood which was poured into Italy—in the states of the church, in Tuscany, and Campania, for instance. We find it in the great churches of Florence, where the Church of Sta. Croce is a conspicuous instance; in Naples, as in the Cathedral of St. Januarius, and in a hundred well-known instances throughout Italy; it held its own till the invasion of Pointed Gothic, and even reappears in some churches of the Renaissance. In those cities in which the German blood prevailed with its progressive instinct, or the Imperial power was dominant, the cruciform type seems to be preferred.

Rome held unswervingly to the Latin type until the time of the middle Renaissance, when under the rule of Julius II. and Leo X., and the artists whom they called about her, she suddenly flung away her conservatism, and became for the time the leader of progress, though it was progress in the revival of her own ancient forms of art and literature. I do not know of any acknowledgment in Rome of the cruciform type before this period, unless it be in her one Gothic church of S. M. Sopra Minerva. When in her lesser churches the transept was omitted she kept the form unimpaired in other respects. To be sure, in the small church of SS. Vincenzo ed Anastasio the nave is carried through the transept, and the apse attached to it, but even here the cruciform shape is not suggested, for the transept arms, lower than the nave, merely abut against it behind two larger arches in the continuous arcade. There is no thought of interpenetration; moreover the whole east end, including the transept, is an afterthought, added in the fourteenth century, and an anomaly which belongs to no type or series of buildings. It would be interesting to find out when and where the idea first occurred of pushing the nave through the transept, and joining it to the apse. The suggestion is apparently an obvious one, and the thing once done, it was natural to push both nave and apse beyond the farther transept wall, and make an eastern arm. When the triumphal arch at the entrance of the transept and that where the apse

had joined it were retained, and similar arches crossing the transept marked the continuation of the nave, the cruciform church was complete. The crossing became part of both nave and transept, but the need or the habit of extending the choir into and even beyond the crossing prevailed, the transept arms were soon disused in the celebration of the service, and became subordinate instead of principal, while the united nave and choir took their natural predominance, to the architectural benefit of the church. This arrangement was sufficiently foreshadowed in those smaller churches of Rome which had no transept, of which S. Clemente and S. M. Cosmedin are the best known examples. In the last the continuity of the longitudinal members is emphasized by the exceptional fact that the aisles as well as the nave end in apses. But Rome refused the cruciform plan.

The second point which I wish to emphasize, wherein Rome clung to her classic precedents, is her favor for the entablature rather than the arch. We all know how the classic Romans subjugated the arch, which was their own property so far as they had any artistic property, to the order, which we are apt to speak of as borrowed from the Greeks. Borrowed it was, in its more developed fashions, the Doric, the Ionic and even the Corinthian, but in its essentials it was the architecture of their own temples, inherited from the Etruscans, and possibly owed its honor as much to its religious associations as to their admiration of Greek art. It had been to them the representative of what was august and sacred, while the arch had been servant of all work. The Greeks themselves, as we have seen, had before Constantine's time rehabilitated the arch and given it the honor that suited its kingly qualities, but the Romans in their conservatism seemed to look upon it as an upstart, unworthy of the place it had won. The arcade was far cheaper than the colonnade, for it required fewer columns. It was easier to build, for it was built of much smaller stones. It was more serviceable, for it favored in the interior that openness which was one great advant-

age of the basilican form of church. Among the three great basilicas of the fourth century, in that which was the most august, if not the most venerable, that which Constantine built at the special intercession of Pope Sylvester to Peter, the patron saint of Rome and head of the Universal Church, the nave was lined with a colonnade and the arcades were remanded to the divisions between the aisles. The other great basilica of Sta. M. Maggiore, built by Sylvester's successor, Liberius, owes its striking effect to the interminable colonnades with their continuous entablatures that border the nave, and tempt us to believe that the Romans were right if they ascribed a peculiar solemnity to the unbroken order. The colonnade appears even in the East in the church of Helena and Constantine at Bethlehem, as we have noticed; we find it once at Constantinople in the oldest church there, the St. John of Studios, built in the fourth century. In Rome it reappears at intervals in the more memorable churches all the way to the thirteenth century; in S. Lorenzo fuori Mura, where it is pieced together out of fragments laboriously gathered from various buildings; in St. M. in Trastevere, in Sta. Prassede, S. Martino al Monte and others. In several of these churches, in St. M. in Trastevere and Sta. Prassede, for instance, relieving arches are built in the frieze to take the weight from the architrave, and hidden by the decoration rather than give the arch the place which its constructive importance deserves. While the entablature was banished from the rest of Europe in the centuries of her depopulation and poverty, when building had almost entirely stopped in Rome, her preference still shows itself in S. Lorenzo in the sixth century, in S. Prassede in the ninth, and when she began to revive in the twelfth, when the fully developed Romanesque was ready to break out

into Gothic outside her walls, with a new prosperity came a new reversion to her old love, and the Church of Sta. M. in Trastevere was built in the old way, and the porch added to the front of S. Giorgio in Velavro, and that built across the front of S. M. Maggiore and since covered up by Fernando Fuga, but shown in an illustration quoted in Letaraouilly's book, eschewed the arch and went back to the entablatures. Even the sumptuous cloisters of S. Paolo Fuori and St. John Lateran show for their principal feature above their graceful arcades the revived entablature, not true to the old proportion, but faithful to the old idea.

As we look back over the history of Rome we see imaged in her architecture the same self-consistency, the same persistent individuality that marks her political endurance. All other cities whose architecture records their history show that they have been different cities at different times. In Rome alone that adherence to her old tradition which held her to a straight course in the time of Constantine is embodied in all her later aspects except for the vagaries of to-day. She is the one architecturally harmonious city in the world, as she is the oldest. She has clung to the forms of her architecture as she has to the traditions of her supremacy, and both are witnesses to the strange tenacity which enabled her to assert her primacy through all ages, in spite of poverty, neglect, humiliation and all that would degrade another city. She is to us a symbol of stability, a symbol perhaps of indifference to that progressiveness which the world loves, often to the things that mean real advance in the condition of men, but also of a noble endurance of time and disaster, of a steadfast dignity which makes the nobility of later ages seem petty, and which has held the garment of her majesty about her—at least till our day.

William P. P. Longfellow.



Pierrefond, France.

STAIRCASE IN THE CHATEAU.



Troy, France.

STAIRCASE.





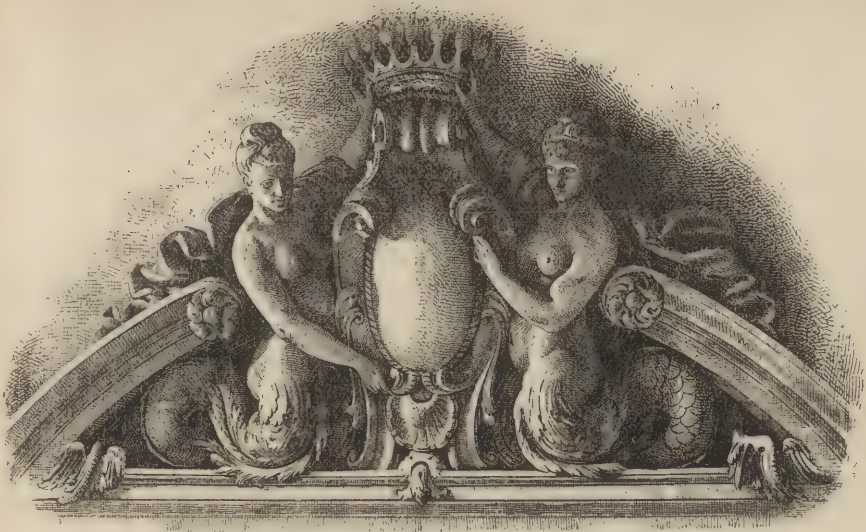
No. 185 Queen's Gate, London,

THE HALL,

R. Norman Shaw, R. A., Architect.



OLD BUILDING IN CHINON, FRANCE.



DECORATIVE ART.



WE are accustomed to thinking of decorative art simply as art which decorates, and which therefore must be secondary; and we are

apt to confound it with art applied to manufactures, which is quite another thing. Decorative art means any form of art used in conjunction with architecture.

Ruskin says: "The only essential difference between decorative art and other art is, being fitted to a fixed place," and this one phrase, "being fitted to a fixed place," not only defines it perfectly, but separates it unmistakably from what he characterizes as "portable art," that is, individual and independent work of the sculptor or painter.

Architecture, supreme as it is among the arts, can never reach its highest perfection except in conjunction with its sister arts. It is like a stately tree, which, at its full completion, adds blossoms to its beauty, and glory, and color, and sweetness of fragrance, and so comes to its full perfection through these.

The phrase, "Art fitted to a fixed place," means much more than that, it

means a brotherhood and sisterhood of art. It means concert of gifts and of power.

All methods and all materials are open to it. It may model or carve or stain; or lay pigment upon pigment, or inlay metal upon metal, or fashion pictures in glass, or weave them into priceless tapestries; and each of these achievements will go hand in hand with others, and all finally stand together as one; as the unit of man's ability, the supreme perfection of his creative power.

The changed conditions of the world, during the later centuries, in which men have been growing in individuality, and the labor of the world growing to be voluntary instead of compulsory; and in consequence of this power of choice, choosing its own directions, and choosing them in lines which are in constant demand, and which supply the necessities of the world, have not been favorable centuries for the production of great examples of art in concert. These changed conditions have had a tendency to make art also, individual; and individual and applied art have flourished; because the first could be appropriated and monopolized by wealthy and success-

ful men, and the second—art applied to manufactures—has been so skillfully diffused as to have become the heritage of the million, of the indistinguishable individual instead of the favored few.

Of course, this condition of the world is far better for the happiness and well-being of mankind; but art, in its costlier and greater manifestations, has suffered from the change and is only now becoming adjusted to new conditions and requirements.

During intermediate centuries, architecture and art in their widest development have waited with idle hands for worthy occupation or, despairing of that, busied themselves with the smaller and more modest wants of the world.

Governments have occasionally called upon the arts to create costly buildings; and private or collective enterprise has furnished casual opportunities in this direction, but practically no great monuments of their united efforts have been created in modern times.

In France, it is true, opportunities have offered which have enabled at least one decorative painter to grow into greatness, and to illustrate modern ideas and methods on broad planes, while others have had a chance to show, by individual examples, what the modern painter believes to be the gospel of decoration. In Italy, Germany, Spain and England, combined art has waited in vain for its opportunities, and in America, so far from having only a suspended existence, it can hardly be said to have existed at all. And yet, during this time and under these conditions, architecture and sculpture and painting have each grown to a healthy maturity in separate lines; and these lines have naturally followed the changing wants of the centuries.

Architecture is not often in these days called upon to fashion a palace or temple or cathedral which will stand as a monument during all the ages to come; but it has learned to fit the needs of successful and luxurious family life as accurately as the cocoon fits the worm which spins it; and to erect halls through which the

business and commercial affairs of the world can march unhindered; as well as in naval architecture to build ships that can dominate the sea, and which would have been the wonder of the elder world. And, in a similar fashion, painting and sculpture have answered to the wants or wishes of man, wherever the demand has been made.

Sculpture has made solitary statues, because these were called for; and painting has made "portable" pictures, because men would fain have for their very own something which could go with them wherever the chances of the world might call them. But painting has not quite stopped at that; it has lent itself to the modern and more limited work of the architect as cheerfully as when its business was to record and portray history in living colors; and especially in America it has made itself felt in the development of color as an element of beauty; so that in private houses, wherever design or composition has an unimportant place, color establishes its court and beautifies the whole interior.

Few Americans who are not artists understand how thoroughly this color-gift belongs to us as a people. Few know that the interior of a model American house is the wonder and admiration of artists who come here from other countries. Comparatively few know that American stained glass leads the world, not only in color effects, but in adaptation of improved manufactures in glass.

Our decorative painters are sometimes happy enough to secure an order for a painted ceiling, but when they are not so fortunate they will work out a problem of color for walls and ceilings which requires quite as much of artistic knowledge, and they will light it with mosaic or painted windows, which make a oneness of beauty that satisfies the finest and most exacting of beauty-loving instincts.

This limited use of decorative art seemed, until very lately, the only theatre open to the decorative artist; and, indeed, it is presumably the most constant and permanent modern field; but it has been recently and greatly broadened by the wonderful effects of

the art, as shown to American people at the Columbian Fair.

The overwhelming value of the arts in sisterhood has probably never since the centuries of the antique world been so fully demonstrated. I think every one who saw the incomparable beauty of the Court of Honor, and after the first daze of effect, began to study the elements of their delight, will never forget that first sense of enjoyment of color as accessory to architecture. The first glimpse of the deepened rose color and ideal figures which posed behind the colonnades of the Agricultural Building, and yet projected a radiance of reflection over the lagoon; the gilding and color of the open domes of the Manufacturers' Building, which not only gave richness and gayety to the architecture but indicated and emphasized its purpose—these things were a joy and a delight.

Neither can one forget how the meaning of every building was deepened and illustrated by the groups of statues which supplemented the porticos or fringed the façades, or gave majesty to the spaces around them. And all this satisfaction of soul and sense was a lesson of the value which each art derives from association with others, and of the absolute preciousness of the tie between them.

As artists, as painters, as sculptors, and as lovers of the arts, we owe to that great enterprise, which was named "The Columbian Fair," that the field of artistic effort has been so greatly enlarged by examples of good painting and good sculpture as accessory to architecture. That it has also marked out a defined field for a certain class of effort, and that the lines of the painter and sculptor have been enlarged and made to embrace the highest and greatest work possible to mankind, even although it is limited, and marked as *accessory* and not independent.

We owe to the Columbian Fair that in the hitherto contracted field of art in America a seed of thought has been planted which is already working a revolution in the prospects and conditions of artistic production, and that

the tendency is toward less imitative and more distinctly national art, not only in our public buildings but in our homes.

The new Boston Library, which is evidently intended to be a step in advance of any instance of permanent public architecture in the country, is adding to its value the efforts of at least two of our prominent painters, and it is said that Purvis de Chavanner, the most, or the only distinctly decorative painter of the modern French school, has also been invited to contribute to its adornment. Other cities will follow this example and other painters will find their opportunities of public work and demonstrate their ability to execute it, for the power and faculty exist, although for the most part, in abeyance.

We see, then, that although decorative art at its highest point of development has been a waning instead of a growing need of the later world, on the other hand the growth of a luxurious type of domestic architecture has encouraged the exercise of a studied and artistic use of color and design, so that its effects, although in a modified form, have an almost universal inapplication.

Every successful modern house—and there are many of them—owes its beauty and harmony of interior to the decorative knowledge of some man who has been thoroughly educated as an artist, and can carry his work much farther than arranging valuable schemes of color, wherever he finds it necessary and appropriate. The very fact of his self-restraint in domestic interiors proves his ability to deal with larger problems; since *appropriateness* is the first and most important law of decoration, the very foundation-stone of all good art.

In one direction only, that of stained and decorative glass, the field of the decorative painter is enlarged rather than diminished. This medium of color can be both so splendid and so conservative, that it is easily made appropriate both to the most important public buildings and to the most modest and refined of private houses; consequently this enticing form of dec-

orative art has really advanced rather than retrograded.

The use of opalescent and semi-opaque glass gives a softness and mystery of effect which is impossible to transparent cathedral glass: and the mixture of stains, and the irregular thickness and uneven surface of much of the new glass give possibilities of subtle modulations of color which artists have been eager to take advantage of.

That painting of easel pictures has been effective training for the men who have brought decorative glass to its present pre-eminence in this country no one can doubt; since those who have been leading experimenters and most successful producers, are painters who had made reputations as "colorists" before becoming identified with this particular form of art.

The two most prominent leaders in its development, John Lafarge and Louis Tiffany, were in fact not only distinguished among painters as colorists, but were men possessing inventive faculty, and that sort of divine curiosity which leads and tempts the men of genius from one to another successive step, until he reaches some half-dreamed-of achievement. This faculty which is of such inestimable value in the mechanical arts, has rarely found so high and fascinating a field as in decorative glass. The reward of transcendent beauty which has followed every step of its progress has not only been an exceeding great reward in itself, but it has unquestionably affected the very marked color development of other forms of art. Reaching after the color effects possible only to stained or painted glass—the incomparable beauty of light strained through color—our painters have added strength and harmony to their tints. It has keyed up the color sense of art workers, not only in pigments, but in a marked degree in textiles and embroideries.

Curiously enough, the effect which the color of such a miracle-working medium as glass has had upon the textiles of America, has spread to other countries, and made a positive impression upon the art qualities of the weav-

ings first of England, and subsequently of France. It is interesting to trace this influence through all the hidden veins of commerce and note how the development of one art, or of one quality of a certain form of art, derived directly from qualities of mind of the artist, spreads and melts through other minds, working in other mediums, until widely different forms and substances are colored by it. It is like a ray of light at sunset, which sends its tints across the breadth of heaven and reflects upon the surface of every pool and thread of water which sleeps or flows upon the corresponding breadth of earth.

While the qualities of stained glass have undoubtedly influenced the color of the American painter, both in pictures and interiors, a counter-influence has been developed by the unmistakable bias of architects toward the cool light tints belonging naturally to the architectural styles of the French Renaissance. Fortunately for the development of the national instinct for color, this preference for the forms and belongings of that strongly-marked period of art has been half-unconsciously accepted by the public as only appropriate to the public and ceremonious apartments of the house, leaving the intimate and family apartments to the influence of the national instinct for color and decoration. It is a sort of compromise between the leading of the architect and the bias of the people.

As a rule, the architect is not particularly sensitive to color. To both architect and sculptor perfection and elevation of form satisfies the artistic sense and seems in fact to obliterate the color sense.

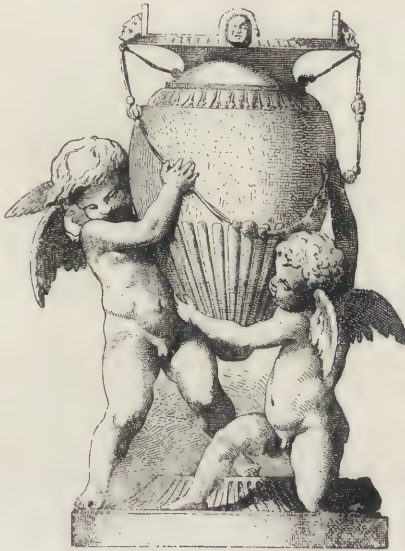
This makes a very curious situation as far as our domestic art is concerned, since the genius and sensitiveness of the people to color is not only instinctive, but highly cultivated. The result is that the drawing-rooms and halls of many of our important private houses might be palace interiors of the seventeenth century, while the dining and living rooms are a genuine product of American art—rich and skilful in color, thoughtful and original in treatment

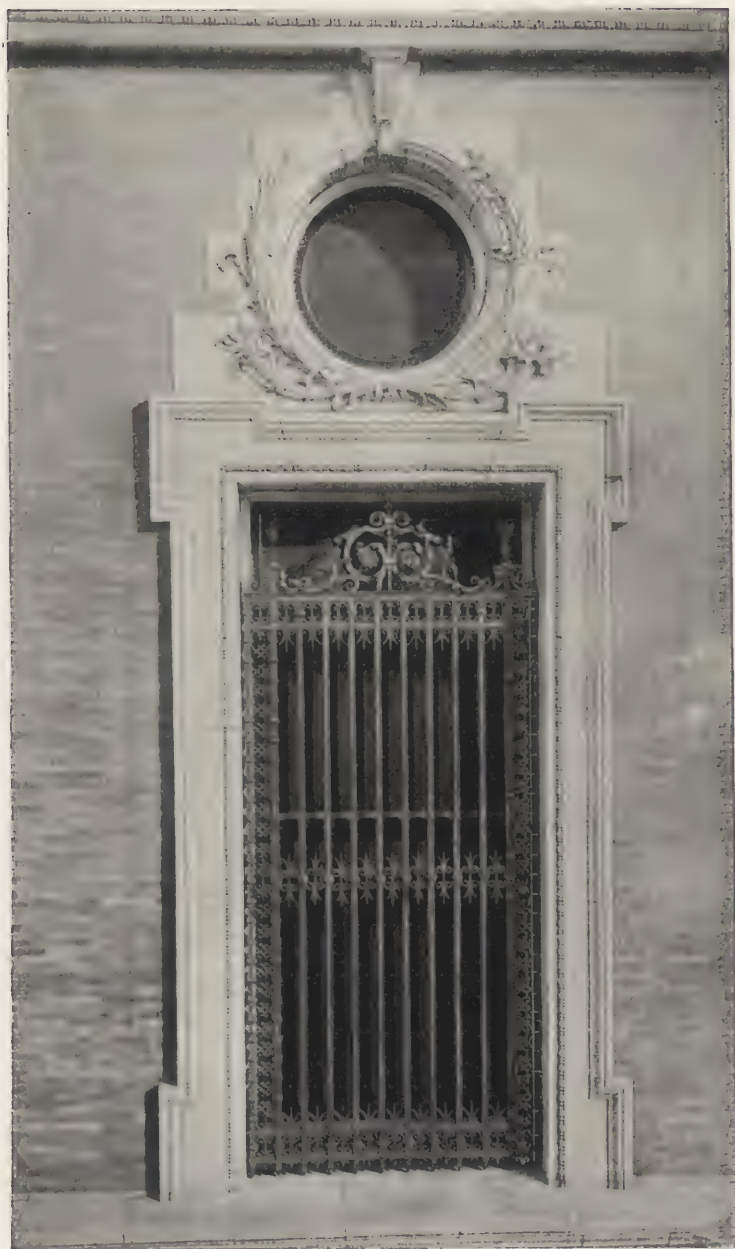
and perfectly appropriate to the life and moods of the century.

Of course, a style or development of art founded upon national gifts or preferences and instinct with living motives is more likely to become permanent and general than a more or

less accidental graft perfected by a different race under widely different conditions; but it may and probably will modify and give a certain purity and elegance to what in the future will harden into a characteristic American style of architecture and decoration.

Candace Wheeler.





WINDOW IN TRUST AND SAFE DEPOSIT CO.'S BUILDING.

Camden, N. J.

Frank Miles Day, Architect.



Entablature of a door in No. 25 Pearl Street, Albany.

THE COLONIAL BUILDINGS OF RENSSELAERWYCK.



HERE are in America but few localities where the buildings possess the element of historic interest, which gives to the architecture of

Europe its chief charm. This is so, not because we are essentially a new country, but because the restless spirit of progress, which delights fully as much in tearing down as in building up, ever demands that the crooked must be made straight and that the old must give place to the new.

It is not that we Americans live so wholly in the present and the future that we are careless of the past, but we have so long made it our boast that ours is a new country that we forget that it is no longer in its youth. It is from contempt, as well as from ignorance, that our own historic spots are neglected; for our historic buildings are for the most part isolated or surrounded by the busy traffic of a modern street. The interest which they inspire is, therefore, personal rather than local, and it is with difficulty that we can forget the present and think of them as they were rather than as they are.

We forget that there are many towns which have stood still, while the century which saw their birth has died and another is drawing to its close; that there are localities which have preserved the color and feeling of the past

as perfectly as have many of the quaint cities of the Old World. Such is many a New England town, where the stately houses of Colonial days stand half concealed among elms no younger than themselves. So also have the great mansions of the South something to tell us of a life now changed beyond recognition. Even the West, young as we are apt to think it, has its convent buildings to remind us that it too has had a past.

It was but a few years ago that Albany possessed a no less striking individuality. The architecture of the city was still distinctly Colonial, and many a Dutch building showed its gable to the street. During the last twenty years, these buildings have been for the most part removed, and there remain only a few of the more pretentious dwellings, which have opposed successfully the march of progress.

It is the purpose of the present article to describe a few of the many mansions for which that city was once noted; but if we would intelligently study the architecture of these buildings, we must consider the times in which they were built; we must forget the present and the immediate past and see the city of the early century, the point of distribution on the great high roads which poured the traffic of the valleys of the Hoosac, the Genesee and the Mohawk into the city's storehouses. New York was then the great wheat raising State

and much of the profits found their way to Albany. From this period date most of the handsome dwellings, which are remarkable for their beautiful Colonial details. The great mansions, the homes of the many well-known families of Colonial and Revolutionary fame, date from a few years earlier and were erected in the last half of the eighteenth century.

But we must follow the perspective still farther, to the days when Albany was an important trading post, and picture to ourselves the narrow, winding streets, widening in places to encircle the church, the fort, and the market; the temples of the three gods in whose honor this, as every other colony, was founded.

In the further distance we see the frontier village, whose very insignificance was a stronger defense than the stockades and the little fort around which the few rude huts clustered for protection; and yet this struggling hamlet is not so insignificant, for it is the most distant outpost of the greatest migration that the world has ever known.

But, for the fatherland of the settlers we must look far away from the colony itself, to the little republic, which was then the greatest naval power in the world, in whose honor the colony was named New Netherlands.

It is not within the province of the present article to describe the various attempts at colonization, which were made successively by the Dutch East India, the New Netherlands and the West India Companies.

Though a colony had been planted on the site of Albany as early as 1614 and again in 1623, when Fort Orange was erected by the West India Company, it was not until 1630 that the colony was placed upon a firm basis; for the settlers preferred to carry on a lucrative trade with the Indians rather than to establish permanent homes and cultivate the land.

The States-General soon saw what an unstable and unreliable people their colonists were, for in October, 1628, the reports say: "there are no families at Fort Orange; they keep five and twenty traders there;" and in the fol-

lowing year the Assembly reported to the States General: "The people conveyed by us thither have found but scanty means of livelihood and have not been a profit but a detriment to this (West India) company." A new scheme was therefore planned, with the object of colonizing artisans and farmers and to provide a field for the ambitious and the enterprising. Accordingly, in 1629, a charter was granted, which provided for the founding of a landed and baronial aristocracy in the New Netherlands. In the following year several Directors of the West India Company hastened to avail themselves of its privileges. Among these was Killian Van Rensselaer, a wealthy pearl merchant of Amsterdam, at a time when the merchants of Holland were, like those of Italy, princes in the land.

In 1629 Van Rensselaer and two of his associates sent agents to America to select suitable places for the establishment of colonies. Three sites were selected, one in Delaware, "Swaanendael," or "Valley of Swans;" one in New Jersey, "Pavonia," or "Land of Peacocks," and "Rensselaerwyck," named from the Manor of Rensselaer, the estate of the family near Nykerk, Holland.

Through his agent, Van Rensselaer purchased in 1629 a large tract of land from the Indian owners. These purchases were augmented until he found himself possessed of a tract of land twenty-four miles long and forty-eight miles wide, extending on both sides of the Hudson and containing 700,000 acres, in which are now comprised the counties of Rensselaer, Albany, and part of Columbia. The deeds signed by the Indian owners and a map made in 1630 by the agent who purchased the property are still preserved among the Van Rensselaer papers.

It was from Rome that the Dutch conceived the idea of governing a remote colony by committing it to the jurisdiction of a Patroon (Latin, Patronus). The power conferred upon the Patroon was analogous to that of the old feudal barons. He acknowledged only the States-General as his superiors and maintained a high military and judicial authority within his territorial

limits. He had his own fortresses planted with his own cannon,* manned with his own soldiers, who fought under his own flag. The Courts of the Colony were his and justice was administered in his name.

The Patroon's charter having provided that the "colonie" should contain within four years after its establishment at least fifty persons over fifteen years of age, Van Rensselaer lost no time in complying with the requirements. Early in 1630 he equipped a ship which carried to Fort Orange a large number of artisans with their families. These were soon provided with farms, live stock, buildings and implements at the expense of the Patroon. In return the tenants bound themselves to pay over a certain portion of the farm produce yearly, to grind their grain at the Patroon's mill and purchase their supplies at his store.

Killian Van Rensselaer, the first Patroon, never visited his possessions, which were managed by an agent. The first member of the family to visit America was his son, Jan Baptiste Van Rensselaer, who was appointed Director in 1652 and took up his residence on Castle Island under the protection of the guns of Fort Orange. Shortly afterwards he removed to the mainland and erected a rude dwelling with a thatch roof, which was destroyed by flood in 1665.

It was to replace this building that the first building known as the Manor House was erected by Jeremias, who had succeeded his brother as Director, in 1658. When Stuyvesant seized the lands around Fort Orange the tenants were compelled to procure "ground briefs" or deeds from the Director General, and it was to escape this indignity that Van Rensselaer moved his residence beyond the limits of Fort

Orange and erected the new building at Watervliet.

This was a long, low one-story dwelling, built of brick, which, it is said, were imported from the mother country. The windows were small and protected by stout shutters of wood, heavily barred. The front door was divided horizontally in halves and was reached by a "stoop" with seats on either side.

The house was planned as much for a place of defense as a dwelling, for several stone loop-holes, which are still preserved, pierced the thick walls. After the Manor House of 1765 had been erected this building was occupied by the Patroon's agent until 1840, when it was destroyed to permit a change in the "Troy road," when a more pretentious agent's house was erected immediately behind it. A small brick building, with immensely thick walls and vaulted roof is still standing. Here the rents were paid in through a heavily-barred window, and here the collection of Van Rensselaer papers, dating from 1630 and comprising several thousand documents are kept.

Among them is a letter written in 1666 by Richard Van Rensselaer, a younger son of the first Patroon, in which he describes a dwelling which he was building some four miles to the north of the fort. This was the famous "Flatts," which six years later passed into the hands of the Schuylers, in whose possession it has remained ever since.

It was here that Philip Schuyler, the founder of that family, lived. Here "Aunt Schuyler," the "American Lady" of Mrs. Grant's "Memoirs," famous for her breeding and hospitality, presided for thirty years after her husband's death. Here was born Colonel Peter Schuyler, the first Mayor of Albany (1686). Between the house and the river, along whose bank was the great turnpike, a party of Mohawks attacked the Mohegans in 1677 and took many prisoners. Here, in 1690, General Winthrop assembled the detachments of his army. From the "Flatts" two bands, under the command of John and Peter Schuyler,

* One of the cannon, shown in the illustration, is still in the possession of the Van Rensselaer family. The cannon is of bronze and is 3 feet 5 inches long. The bore measures 3 1/8 inches. Upon the base ring is cast this inscription: "Assuerus Koster Me fecit Amstelredam 1630". The base of the breach is covered with raised tracery, on which is shown a pattern of sea horses with widespread wings, surrounded with delicate arabesques. The cascabel is ornamented with fleur-de-lis and leaves. Tradition relates that the cannon was fired to announce the death of a Patroon and the birth of an heir.



The Homestead of the Schuylers.

THE "FLATTS"

Built 1666; Reconstructed 1756.

started on their expeditions against Canada, and assembled their Indian allies. Along the high road before the house for seventy years marched the several armies against the French. Under its roof the gallant Lord Howe, Abercrombie and other officers were entertained on their way to meet defeat at Ticonderoga, and here Lord Howe was carried to die.

Mrs. Grant's "Memoirs of an American Lady" (pages 110-114) thus describes the old house: "It was a large brick house of two or rather three stories (for there were excellent attics) besides a sunk story, finished with the exactest neatness. The house had two spacious floors; on the first there were three rooms, and in the upper one four. Through the middle of the house was a wide passage, with opposite front and back doors, which in summer admitted a stream of air peculiarly grateful to the languid senses. Here the family usually sat in hot weather, when there were no ceremonious strangers. At the back of the house was a smaller and lower one, so joined to it as to make

the form of a cross. There were one or two lower and smaller rooms below, and the same number above afforded a refuge to the family during the rigors of winter, when the spacious summer rooms would have been intolerably cold. Here, too, was a sunk story, while the kitchen was immediately below the eating parlor and increased the general warmth of the house."

The building was partly destroyed by fire in 1756. The front was injured the most, the upper story being completely destroyed. The walls were brought to a level, and the building is now but a story and a-half high. The new and the old can plainly be discerned by the difference in the sizes of the brick. The thick walls of the "winter house" withstood the fire and are still preserved.

The interior of the house is not especially remarkable. Some portions of the woodwork, noticeably the large "Dutch" door with its ponderous brass knocker, being from the original house, others being comparatively of modern date. The house is furnished with



Manor House of the Van Rensselaers.

THE "CRAILO."

(Said to have been erected in 1642, and supposed to be the oldest dwelling existing in the United States.)

beautifully carved mahogany furniture of Holland make and on the walls are many a portrait black with time.

The dwellings in the city proper, confined to more narrow limits, were higher and more regular in plan. Their high gable ends were toward the street and were "stepped" to the ridge, where they terminated in large chimneys, or the gables were plain and the "stepped" appearance was indicated by a pattern of bricks laid at an inclined angle. The abundant use of wrought iron was characteristic of this period. The walls were decorated with numerous ornamental iron anchors, with the dates of the erection of the building or the initials of the builders, the gables and chimneys were decorated with many and large weather-vanes and other ornamental work. The walls were thick and were pierced by small windows with heavy wooden shutters.

The door was invariably divided horizontally and every house was provided with its large "stoop" where the members of the family were wont to assemble to gossip, as they ate the evening meal in the open air. Several of these buildings were preserved until recent years—until within five years the house in which Gen. Philip Schuyler was born, erected in 1686 as a city residence by Peter Schuyler, when he became Albany's first Mayor, and the Lansing House, famous 175 years ago as the Exchange, where the Indian bartered his pelts for rum, tobacco and ammunition.

A few yards from the east bank of the Hudson stands the homestead of the younger and larger branch of the Van Rensselaer family, the "Crailo" Manor House. A bronzed tablet affixed to the walls declares it to have been erected in 1642, and that it is the old-

est dwelling in the United States. In the garden back of the house the Continental army, in June, 1775, held its cantonment on its way to Ticonderoga, and the house itself was occupied by Abercrombie as his headquarters. Here it was that Dr. Stackpole, a British surgeon, composed the song of "Yankee Doodle" in derision of the American troops who came straggling into camp in all kinds of clothes.

About few places has tradition weaved a greater mass of romantic stories, most of which are myths. According to common belief the building was erected by Killian Van Rensselaer for his son Johannes, between the years 1630 and 1642. The bricks and timbers are supposed to have been brought from Holland as ballast for the ships. The former, it is said, are stamped with the date 1629 or 1630—on this point tradition is undecided—and the latter are carved with the initials K. V. R. and the date 1642. In the cellar is a secret passage connecting with the well, and in the floor is a trap door designed like an oubliette to entrap the unwary enemy.

Unfortunately none of these corroborating facts will bear investigation. Neither Killian nor Johannes Van Rensselaer ever visited this country, and it is well known that the Patroon's agents, his sons, occupied dwellings but little better than mere huts, and that these successive houses were built on the other side of the river, where they were protected by the guns of the fort.

The bricks are not stamped with the date, and in point of size and form are between the very old Dutch brick and the later Colonial brick.*

* When the Van Rensselaer Manor House was demolished in 1893, I found beneath the basement floor and concealed by earth a vault 10 feet long, 6 feet wide and 5 feet high, with a vaulted ceiling. The vault was made of very rough, hand-made brick, which had evidently formed part of a previous structure, as many of them were blackened with smoke while others had been painted. It is probable that the vault was an outbuilding of the Manor House of 1666. The brick varied in size but averaged $6\frac{3}{4} \times 1\frac{1}{2}$ inches. They are doubtless as old as any in the colony. The Colonial brick of the later Manor House were $9\frac{1}{4} \times 2$ inches. I am inclined to doubt whether any brick was ever brought from the mother country in spite of the tradition which affirms it concerning nearly every old building. The earliest brick is of the most twisted and crude shape. Certainly better brick was made in Holland at this period and only the best would be exported from principles of economy. A description of Albany, written in 1656 by a French missionary, tells us

It is known that the Crailo estate on the east bank of the Hudson came into the possession of Hendrik Van Rensselaer in 1704 on the division of his father's estate, and that he erected shortly afterwards a "substantial brick house" for himself upon his property, which, it is evident from a map, occupied a position, approximately that of the house in question.

The building is a two-story and attic brick structure of most substantial construction. The walls are of great thickness, and are still pierced with two of the nine stone loopholes which once commanded the approaches. The beams of hewn pine are of unusual size, some of them being 16 inches square.

About the middle of the eighteenth century the rude fortress-like dwelling was transformed into a handsome residence and an addition was made in the rear (1740).

The main entrance is in the middle of the river front and gives access to a small hall, from which open doors, leading to the main rooms on either side. At the end of the hall springs an arch, the impostes and soffits of which are ornamented with delicate garlands in low relief. Beyond is the staircase, which is rather insignificant.

A second and much larger paneled hall, giving upon the porch at the left, intersects this hall at the centre of the house. This house is most curiously planned; all the rooms connect with each other, usually by means of closets, but as there are several levels on the same story the doors in some cases open several feet above the floor of the lower room. There is no apparent reason for this difference of level unless it was purposely designed to increase the difficulty of capture, the house being taken by an enemy.

Two of the mantels, apparently of much later date, are of excellent design. The shelf of one is supported upon slender columns, of the other by gables. The panels have "egg-and-dart" mouldings and are decorated with wreaths and garlands in relief.

that there were at that time no buildings of masonry in the vicinity. If the first brick buildings were erected in 1656 it would be strange that the clay beds in the vicinity were not used, which after an occupation of twenty-five years must have been known to the settlers.

The building some years ago passed out of the hands of the Van Rensselaers, and the property is now in litigation. Pending the settlement, the house has been unoccupied for a year and has been the retreat of a band of young roughs, who have broken the windows, defaced the woodwork and demolished the mantels and balusters.

Not far from the Crailo Manor is Vlie House (the house by the marsh),

stones, Schuylers and Van Rensselaers of Revolutionary days. The hall, at the end of which is the staircase, runs the entire depth of the building and on either side open the two main parlors, back of which and also giving on the hall, are dining-room and library.

The woodwork of the house is especially noticeable. The doors are surmounted by broken pediments and the



Erected by Hendrik Cuyler, about 1773. "VLEIE HOUSE."

built by Hendrik Cuyler, about 1773. It is a large square brick building in the Colonial style, and stands in the midst of its gardens and orchards, which slope down to the river's bank.

The building is of a creamy tint, with cornice, porch and window frames in white. The large door, with its ponderous locks, opens upon a hall of no mean proportions, from whose walls look down the portraits of the Living-

stones, Schuylers and Van Rensselaers of Revolutionary days. The hall, at the end of which is the staircase, runs the entire depth of the building and on either side open the two main parlors, back of which and also giving on the hall, are dining-room and library. The woodwork of the house is especially noticeable. The doors are surmounted by broken pediments and the

The design of much of the woodwork appears to have been borrowed from that of the Van Rensselaer Manor



Erected 1760.

THE SCHUYLER MANSION.

House, or else both were derived from a common source, for much is identical.

The second story is similar in plan to the first, the hall extending to the front, from which open the four large bedrooms.

The building has come down quite unchanged from the hands of the first occupant. The gardens are still filled with the same old-fashioned flowers—lilacs, syringas, Malta currants and hollyhocks. Still more remarkable, the interior is furnished in the same spirit which pervades the entire estate, for the furniture is much of it as old if not older than the building itself, and the abundance of black mahogany has left no room for our modern “antique” ash.

Very similar to Vlie House, both in exterior and in plan, is the Schuyler Mansion, built by the wife of Gen. Philip Schuyler while he was in England in 1760-1761.

A short flight of steps with wrought iron railing of graceful design leads to a small hexagonal vestibule, from which the large hall is reached. On either side are the principal rooms and in the rear, reached through a pair of large doors, is the staircase. Here is shown the famous tomahawk mark. In 1781 a plan was made to capture General Schuyler and take him to Canada. A party of Tories, Canadians and Indians, surrounded the house for several days and at length forced an entrance. The family took refuge in the upper story, leaving behind in their haste the youngest member of the family, Margaret Schuyler, afterward the wife of the Patroon. An elder sister going to rescue the infant was pursued by an Indian, who threw his tomahawk at her as she fled up the stairs. The weapon entered the handrail near the newel and the mark is still shown, which would be conclusive evidence if the



HALL OF SCHUYLER HOUSE.

same story were not told of the Glen house in Schenectady, the only house unburnt in the massacre of 1690. The tomahawk mark is shown here also. Thus history repeats itself.

The Schuyler staircase, aside from history, is well worth examining. The balusters are of three different designs, which are repeated in the same order at every step. All are carved by hand in a different rope pattern. This same design may be found in the staircase of the old Lee house at Marblehead, a house in Salem, Mass., and in one of the great mansions of the South. There are but two handsome mantels, one in the principal parlor, whose fretted picture panel serves as a reredos for the altar of the chapel, for the house is now an orphan asylum of the St. Francis de Sales order, the other in the room directly above, in which Burgoyne was held as a prisoner after his surrender at Saratoga in 1777.

The woodwork, aside from the stair-

case, is not especially remarkable; the interior cornices have large and rather crudely-formed modillions, but the other mouldings are exceedingly well adapted. The rooms throughout the first story have the low white wainscot in two simple panels, which is everywhere found in houses of this period. The doors and windows of the vestibule, which is possibly an addition, are ornamented with gorgons' heads in relief, the other doors are not remarkable.

The house was for many years noted for the hospitality which was dispensed there. Tradition relates that Washington, Lafayette, Count de Rochambeau, Baron Steuben, Aaron Burr, Benjamin Franklin, Charles Carroll of Carrollton, and many other notable persons were entertained. Here Alexander Hamilton and Elizabeth Schuyler were married December 14, 1780. President Fillmore was also married here. It is sadly changed now, for

though the whole of the plateau on which it stands is still the garden, where some attempt has been made to keep up the flower beds surrounded by their box borders, the broad avenue shaded by great elms, which once led from the river directly to the house, is now lined with tenements, and the shady creek which once flowed by the house has for many years served as a sewer.

The house erected in 1798 for Gen.

show the abundant use of moulded decoration which was then coming into fashion. The exterior is ornamented with the anchors and other iron-work so popular with the Dutch; at one end is the date 1796, at the other the initials A. T. B., standing for Abraham Ten Broeck, the first owner.

The Van Rensselaer Manor House or the "Patroon's," as it was usually called, was, at the time of its erection, the handsomest residence in the col-



MANSION OF GENERAL TEN BROECK.

Ten Broeck by his ward, Stephen Van Rensselaer, bears a striking resemblance to the Schuyler Mansion both in exterior and in plan. Here the portico is open, instead of inclosed, but the door opens upon the same large hall, at the end of which, concealed by a partition, is the winding staircase.

The principal rooms open from the hall in the same manner. In the second story the wide hall extends from front to rear. The fireplaces are excellent examples of this period and

onies, and as such it exerted a wide influence over the architecture of the more ambitious dwellings in the neighborhood. The building was erected in 1765 by Stephen Van Rensselaer under the direction of his guardian, Gen. Ten Broeck. He brought his wife, Catharine, daughter of Philip Livingston, "the signer," from New York in a sloop to take possession of his new house. He was then only twenty-three and she a girl still in her teens. With them came their child, a baby in

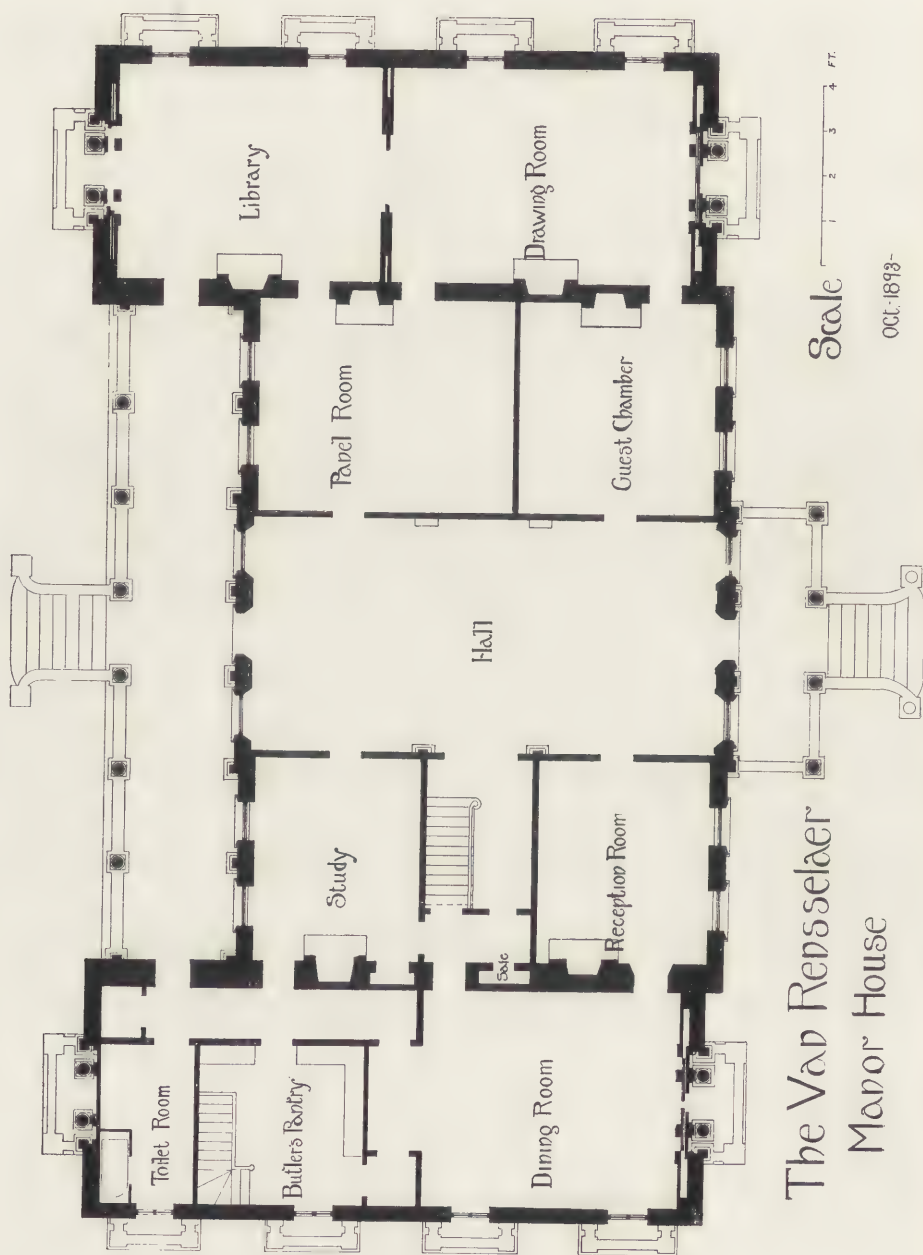


THE VAN RENSSELAER MANOR HOUSE.

arms, afterward Gen. Stephen Van Rensselaer, the most prominent man that the family produced.

The house was so completely remodeled in 1840-43, from designs by Upjohn, that but little resemblance to the old building was left. From an oil painting made before that date the character of the building can clearly be seen, while another painting shows the great gardens. The original house was built of brick of unusual size (9x 4¼x2 inches) and was painted in the Colonial colors, cream and white. A short flight of steps led up to the "stoop," a small porch whose roof was upheld by two Doric columns, above which, in the second story, was the great Palladian window. The house was flanked at either end with octagonal wings but one story in height. The construction of the house was of the heaviest. The walls were everywhere of unusual strength and the floor beams were of hewn pine, ranging in size from 3x12 to 9x11 inches.

On June 3, 1843, the building was opened after the extensive repairs had been completed. The wings had been torn down, some windows blocked up and others opened, the whitestone had been removed and replaced with brown New Jersey sandstone, and the great wings and the porch had been added. When the alterations had been completed the new building bore no resemblance to the old, even in architectural style, and indeed nothing of the old exterior was visible but the brick itself, and even this was half hidden behind a thin coating of sanded mastic. The new stone-work was for the most part of a strictly classical design as though it had been copied from "Rome Moderne," but in some places, noticeably in the gables and belt courses, a distinctly Gothic tendency is displayed. So also wherever the Corinthian order is used, as in the porch, the large pedimented windows or in the wings, the cornices are, in their upper portions, strictly Corinthian, but below the mo-





FRONT DOOR OF VAN RENSSELAER MANOR HOUSE.
(Interior view.)



STAIRCASE DOOR IN THE HALL OF THE MANOR HOUSE.

dillion band the dentels are omitted and the cornice dies away in a few feeble mouldings, giving a decidedly top-heavy appearance. The two wings projected in the rear some 15 feet beyond the main building, and between them was a broad colonade, on which opened the rear door.

The building was rectangular in plan, with the great hall 24 feet broad, extending from the front to the rear of the house, some 46 feet. On either side of front and rear doors were two large windows with deep window seats. The walls were decorated with frescoes upon a yellow background, which in their day were the wonder of the country. These were painted upon large sheets of heavy paper, and were executed in Holland especially for the room and put on in 1768, the bill for which is still in the possession of the family.

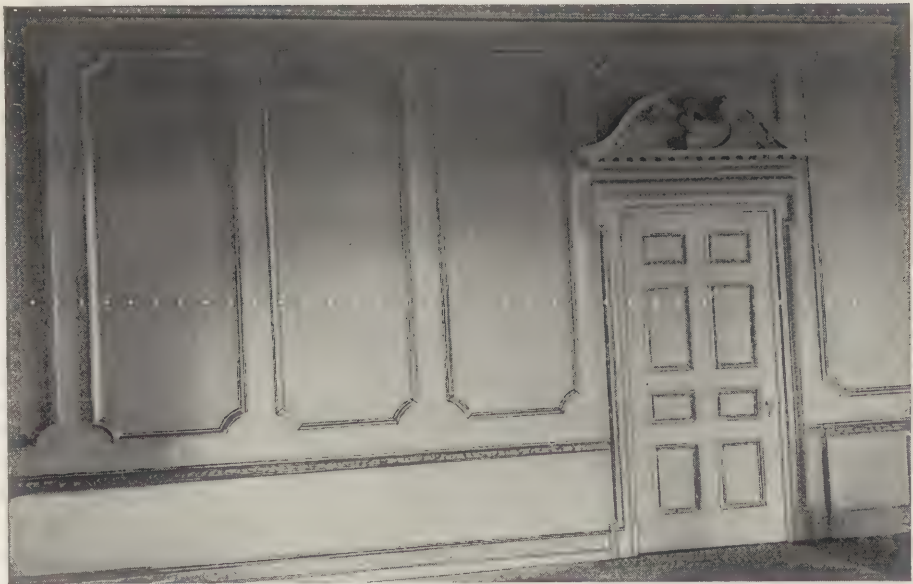
The west wall of the hall was pierced in the centre by a large arched door-

way leading to the stairs, flanked by Ionic pilasters. To right and left were doors giving access in the front to the "green-room," used as a reception-room, and on the rear to the study or office-room of the Patroon. On the opposite wall were two similar doors, one of which gave entrance to the state bedroom in the front, the other to the paneled room in the rear.

There were four large frescoes which filled the wall surfaces on the side walls between the doors and the front and rear walls. A still larger one covered the wall opposite the large arched doorway; on either side of this were four smaller panels representing the four seasons. The pictures were surrounded by arabesques in the style of Louis XV. The woodwork in this hall was very elaborate; the door and window frames were crosseted, and above the doors were broken pediments. The cornice was of carved wood. As has been already said, both



HALL OF THE VAN RENSSELAER MANOR HOUSE.



DETAIL OF "PANEL" ROOM IN MANOR HOUSE.

cornice and doors served as models for those of many other houses of this period.

The state bedroom was a large square room on the first story. Here was the great mahogany bedstead, ornamented with dolphins and wreaths cast in brass. The mantel in this room was one of the few which were preserved when the house was remodeled. Two columns supported the panel bar, on which were carved a lion and a lioness.

Behind this room was the "panel" room, which before the alterations, was used as the family dining-room, the state dinners being given in the large hall. The walls of this room were of wood from floor to ceiling. A low paneled wainscot surrounded the room, whose baseboard and chair rail were elaborately carved with a running pattern. Above, large panels reached to the cornice, which was also of elaborately carved wood. The doors were the most beautiful in the building, the frames were decorated with carved egg-and-dart and waterlily mouldings, and the curved pediment above framed a bust of carved wood. The fireplace was the handsomest in the building, two marble caryatides upholding the mantel shelf.

On the west of the main hall was the private study, a square room whose walls from floor to ceiling were lined with mahogany bookcases. The mantel was upheld by two small columns. Above it was the picture panel, which is almost universally found in houses of this period. The small reception-room had been so completely remodeled that only a fragment of wainscot, with a carved chair-rail, which had been concealed behind a pier glass, was left to show the style of the room in the original house.

The stairs opened off the hall and were lit by a small semicircular window of stained glass in the west wall, on which the family coat of arms was depicted. Tradition declares this to be the original window which was placed in the old Dutch church in 1656, in memory of John Baptist Van Rensselaer. Several others, which were placed in the church by the more im-

portant Dutch families, are of such a different shape, treatment and quality of glass, that it is very doubtful that this is the original window, in spite of its dedication to "Jan Baptit Van Renssilar." The stairs ascend on the right wall with broad treads to the wide landing, on which for many years stood the spinet. In the second story a wide hall, the full width of the stairs, occupied the middle of the house. From this opened through low pedimented doors, eight bedrooms, six of them large square rooms and two of them small dressing-rooms. This hall was used by the family in the evening as a sitting-room. The third or attic story had the same large hall. On this story were only four large bedrooms, the remaining space being occupied by spacious closets. The walls of the stairs and hall walls from the bottom of the house to the top were covered with a glazed paper, grained to imitate oak, divided into panels by egg-and-dart mouldings. The staircase well was lit by a skylight filled with stained glass, which was inserted in the attic floor and lighted by a skylight in the roof.

The east wing was occupied by two large rooms. That in the front was the main reception-room, that in the rear was the library.

The windows of these rooms extended to the floor and gave access to the two large balconies in front and rear and the four small balconies on the sides. The doors were pedimented and they, as well as the windows, had frames decorated with hand-carved egg-and-dart mouldings. These rooms were 16 feet in the clear, and when the great folding doors between them were opened they formed a magnificent room for entertainments.

The walls of the library were lined with beautifully carved mahogany book cases, above which were large plaster busts of the prominent men of those times.

In the west wing was the great dining-room. Here for thirty years a lavish hospitality was dispensed, which made the Manor House a noted place, not in this country alone, but abroad. Indeed the Manor had always been famous for

its hospitality. A noted Englishman who visited this country during the last years of the last century, was overwhelmed by the sumptuousness of the banquet, the magnificence of the family plate and the delicacy of the wines. At the old house at different times were entertained every man of distinction

which stands at the head of Market street." At that time the frescoes in the hall and the furniture of the various rooms were considered remarkable. In subsequent years the house was embellished with the spoils gathered in European travels. Added to the old furniture were cabinets and tables of



WINDOW IN LIBRARY OF VAN RENSSELAER MANOR HOUSE.

and every foreign "lion" from anti-Revolutionary days to the death of Gen. Van Rensselaer, the old Patroon. One of these guests, Timothy Dwight, has recorded his recollection of the house as it was in 1798, when he visited "the mansion of the Hon. Stephen Van Rensselaer, late Lieutenant-Governor,

more delicate workmanship. In the hall stood two Italian alabaster urns six feet high. These were carved with delicate acanthus leaves and the walls were reduced to a shell-like thinness, so that the lights which were placed within showed the delicate carving to great advantage. Here also

stood two large bronze groups ; one of them, that of Chevalier Bayard on horseback, has but one duplicate. Two large Sevres vases of a peculiar blue had been made for Napoleon I. to be presented to the Czar of Russia ; for some reason they subsequently came into the market and were purchased by William Bayard as a gift to his brother-in-law, Gen. Van Rensselaer. In the library a marble statue of Raphael stood beneath a magnificent chandelier of cut crystals. On the walls hung many pictures by well-known foreign artists and portraits of the family from Jan Van Rensselaer and his brother Jeremias, the first members of the family in this country, down to that of the last Patroon. An interesting collection, truly ; some in court costume of scarlet cloth, with great sleeves and embroidered waistcoat, with laces at the throat and a great periwig of powdered hair flowing over the shoulders. Others in plainer costume with the natural hair tied in a queue behind ; others in the uniform of Revolutionary generals ; still others with great coats only relieved by the lace and frilled shirt fronts ; still others in high collars encircled by uncompromising stocks.

As has been said Jeremias Van Rensselaer was forced to remove his residence outside the limit of Fort Orange because of the oppressions of Stuyvesant. About a mile to the north of the fort flowed a stream of the purest water. Here already had been established the several grist mills and saw mills belonging to the Patroon, and here it was that he built the long low house already described, doubtless because the creek which passed so near his house reminded the family of the homeland, indeed the early Dutch invariably selected a low valley for their dwellings and built as closely to the bank of a stream as possible. When in 1765 the new house was to be erected. Van Rensselaer, instead of seeking higher ground for his dwelling, selected a spot even lower and closer to the river. This was about 150 yards to the northeast of the old building. Save for the low ground a more charming spot could not have been found.

The land for several miles to the north was nearly level, to the south could be seen the spires of the city not quite a mile away, to the west rose the steep hills behind which lay the beautiful Tivoli lake, whose clear waters, after plunging down in a noisy waterfall, flowed through the Manor grounds not 100 yards from the house itself. To the east was the Hudson, to whose banks the gardens sloped gently away. Nor were those gardens the restricted gardens of to-day. The building stood in a vast park, which would have done credit to a great English estate. Immediately around the house were great elms, under whose shade the lawn, broken here and there by a piece of statuary or a fountain, looked like a piece of green velvet. To the east, within high box hedges were the gardens, which reached to the summer-house, which overlooked the river.

As for the character of the house itself, no better description can be found than that of Longfellow's.

"It was a pleasant mansion, an abode
Near and yet hidden from the great high-road,
Sequestered among trees, a noble pile,
Baronial and colonial in its style :
Gables and dormer windows everywhere,
And stacks of chimneys rising high in air,—
Pandaean pipes, on which all winds that blew
Made mournful music the whole winter through.
Within unwonted splendors met the eye,
Panels, and floors of oak, and tapestry :
Carved chimney-pieces, whereon brazen dogs
Revelled and roared the Christmas fires of logs."

Back of the house was a long low building whose overhanging eaves were green with moss, and against whose walls were trained peach trees. These were the stables, where still stands the family coach, the sleighs with the curved runners carved like swans' heads, and the other carriages of the style of fifty years ago.

The long expanse of unbroken wall surface which the building displays is most effective. Hidden behind the trees were smaller buildings where slept the servants. Before the house, directly at the head of the broad street which led to the city, was the porter's lodge and the gate which gave entrance to the estate. Here the clear stream, whose banks were shaded by willows

and elms, was crossed by a bridge, famous in the early days of the century as the "kissing bridge." To the west were the Patroon's mills, the overseer's house, a large building with a portico supported by brick piers, and the long low building where the tenants paid their rent.

Among the papers preserved in this old building is the account book of Gen. Ten Broeck, the guardian, during his minority, of Stephen, the old Patroon, as he had been of his father before him. Here under the entry of a "charge for beef and liquor consumed in a dinner to the tenantry on this your glorious twenty-first birthday" is a brief mention of a transaction which many years later took from the Van Rensselaers many of their acres. On that day, acting it is said upon the legal advice of his brother-in-law, Alexander Hamilton, the Patroon, sold in fee, with warranty of title, his farming lands in Albany and Rensselaer Counties. Nine hundred farms of 150 acres each or more than 207 square miles, were leased on that day. The feudal rights were still to be recognized in nominal rents to be paid at the storehouse at Watervliet, of a specified number of "bushels of good, clean merchantable winter wheat, four fat fowls and one day's service with carriage and horses." The old Patroon was a kind-hearted man and was never persistent in the matter of a delinquent tenant. If the full rent could not be paid he accepted what was offered. On his death in 1839, the property instead of being bequeathed to the eldest son, as had been the custom since 1685, when the estate was created an English Manor, was divided between his nine children, Stephen, called the fourth, succeeding to the Manor. The heirs demanded full returns and insisted that all back rents should be paid in full and threatened to prosecute every delinquent. The tenants who had at first complied with some grumbling, soon became restive, then defiant, and finally questioned the legality of the reservation. The legality of the rights of the landlord being once in question, an irreconcilable conflict the ("anti-rent war") was precipitated, during

which the sheriff and his posse were attacked and routed with some bloodshed, the troops were called out by the Governor and the matter was only finally settled by the Constitutional convention of 1846, which abolished all feudal tenures.

Although the property had been greatly decreased by division, Stephen Van Rensselaer, the fourth in direct descent of that name, was still a very wealthy man. Under him the wings and other improvements were added, and entertainments were for many years carried on in a lavish manner. In the early sixties the Patroon had become an old man; entertainments were given but seldom. He died May 25, 1868, and with him the old order of things passed away as completely as though he were the last of his race. His widow lived in the house until her death in 1876, when the family left it forever. The property was then divided among the heirs, and the house, stripped of its furniture, was left in the hands of caretakers.

The place had become undesirable as a residence. To the south, not far from the house, the New York Central tracks crossed the street, at whose head stood the Manor House, and wound to the left through the valley once occupied by the Patroon's creek and the little lake of Tivoli. Between the house and the river ran the Erie Canal, along which what was once the garden, had been divided by slips, and transformed into the great "Lumber District," for which Albany was noted. Through the narrow strip, between the house and the canal, the Delaware & Hudson Railroad laid its tracks and switches. It was evident that the doom of the old place was sealed.

A street was cut to the north to the rear of the stables, another to the south, within a few rods of the house. It was now in the midst of the manufacturing district, and noisy factories were on every side. The lodge was transposed into an office for a machine shop; between that and the house a large pattern maker's shop was erected.

The magnificent elms, which had been planted when the site of the



MANTEL IN DINING ROOM OF QUACKENBUSH HOUSE.

Manor was but the garden of a still older house, were one by one cut down, the beautiful shrubbery which had lined the many shady walks had gradually disappeared, and the turf and gardens over which the tenderest care had been lavished for over a century were obliterated. The stables and outhouses were falling to pieces, and the house itself, standing bare and desolate against the background of lumber piles, was rapidly falling to decay.

In the fall of 1893 a spur of the Central Railroad was laid directly in front of the house, and another was to pass close to the west wall. The old house had at last outlived its usefulness, and its destruction was determined on. Accordingly the building, which for more than a hundred years had represented the social side of the city life, was demolished.

The stone and timbers were transported to Williamstown, Mass., where

they have been used in the construction of the new chapter house of the Sigma Phi Society, a building which in many ways resembles the Manor House.

While it is sad to think that the building which had for so many years excited the pride and admiration of the city has been destroyed, it is far better that it should be removed while the recollection of the estate as it was in its perfection is still fresh in mind, than that it should remain to drag on a few more years of a neglected and dishonored old age.

This has been the fate of the Beverwyck Manor House, the residence of Wm. P. Van Rensselaer, the younger son of the "old Patroon." On the division of his father's estate, he became possessed of that portion of the property which lay on the east bank of the Hudson. He at once began the erection of a "Manor House," which

in many ways was handsomer than the Watervliet Manor. The building stands on the level summit of a high hill, or rather upon the edge of a great plateau, which descends at a steep grade to the waters of the Hudson. The hill is completely covered by a dense growth of sturdy trees, through which the road winds for more than a mile before the plateau is reached, at some distance from the house. Here and there are a few great elms, but this great park is for the most part open, being skirted on either side by the forest which covers the hillsides which slope rapidly down to the two ravines which bound the estate to north and south. At the end stands the house, which is still, even in its decay, impressive. In style it is a good example of the many English manors built in the Greek style so popular in England during the first quarter of this century. In front of the building, which faces the plateau, is the porch, supported by four Ionic columns of brownstone. At the right is a broad elevated porch, to the left were the conservatories.

The rooms are of truly magnificent proportions, and the interior very successfully carried out the spirit of the great English manors, which the long approach and great park so well suggested. The entrance door, flanked by two great windows, gave upon a large, square hall paved with marble. The walls were of a hard and polished plaster, and a full entablature surrounded the upper portions. Two columns and pilasters of colored Italian marble with white Ionic capitals carried the entablature and separated the square hall from a larger and rectangular hall. This also was paved with marble and finished in the same style. At the left was the marble staircase, with wrought iron rail, which was too small to harmonize with a hall of such monumental proportions.

Opening off the hall by doors of polished mahogany, set in classic frames of carved wood, were the principal rooms of the first story. Occupying the central portion of the house and immediately back of the hall was the library, a large rectangular room, whose walls were covered to the ceiling with

mahogany bookcases. Two columns and pilasters of colored marble separated the great bay which formed the main feature on the river side. Here windows opening to the ground gave access to the balcony, from which a fine view of the river and the city on the opposite shore could be obtained.

The ceiling of the library is frescoed with many converging lines, which gives the effect of a high dome. As the first story is 18 feet high the effect is very deceptive, but startling when the observer changes his position.

At the left were the dining-room and reception-room, from which doors opened upon the conservatory; to the right or north, were a large billiard hall opening on to the porch and a smaller reception-room. A smaller staircase ascended at this end of the hall also, and gave access to the room in a mezzanine story. The second story was occupied by a wide hall, from which opened the many large bedrooms with the connecting dressing-rooms. In the attic story were the rooms for the servants.

The fireplaces throughout the first story were imported from Italy, where the white marble was carved with the greatest delicacy. On one is depicted the "Chariot of the Sun," by Raphael, on another Pan is playing on his pipes to a group of listening satyrs, on a third is Bacchus with his attendant nymphs. There also may be seen Orpheus charming the dolphins with his lyre, and Paris awarding the golden apple.

The walls of some of the rooms are frescoed with Cupids, and on the ceiling of the reception-room is the Van Rensselaer coat of arms.

Within a few years after its erection the estate was sold. Its new owners occupied it for a short time, but finally abandoned it, and the rooms still filled with their wealth of furniture were for years without an occupant. Recently the furniture has been removed, and the building is now fast falling to decay. The mastic is falling from the walls, the windows have been boarded up to keep the rain from beating through the broken panes. The conservatory has entirely disappeared, much of the cop-



DOOR IN DRAWING ROOM OF BRADFORD WOOD HOUSE.

per roof has been stolen, the stone balustrade which once surrounded the terrace on the river front is battered and broken. The once beautiful gardens have for years run riot, the well-kept lawns have been used for pasture, and trees now obstruct the vistas through which the river and surrounding valleys were once seen. On the marble pavement of the hall, with a background of marble pillars and mahogany doors, two ragged Irishwomen were washing clothes. On the marble staircase ragged, bare-legged children were romping with their dogs, and the mingled smell of onions and soap-suds filled the rooms whose proportions and finish would not shame a palace.

Better, indeed, is it to destroy a house than to leave it to fall into ruin and decay.

While this Beverwyck Manor does not fall strictly within the scope of this article, for not in age or style is it Colonial, yet it is closely allied in spirit with the other great manors for which the city was remarkable.

The other residences in the city proper were small in comparison with these great houses, and were for the most part a development of the modest brick dwellings in the Dutch style already described.

The "Stevenson House," erected in 1780 by a rich fur trader, is said to have been the first private dwelling erected in Albany in the Colonial style. It was considered as a new departure, and known as "the rich man's house." The Colonial features were confined to the doorway, the Palladian window and the cornice. The new style grew in favor, and the new houses were erected on a similar plan. The exteriors were, for the most part, of great simplicity; the main entrance was, perhaps, arched and filled with glass in Colonial patterns; the cornices were often elaborate, and the roof was pierced with arched and paneled dormer windows. Occasionally a Palladian window in the centre of the second story marked the wide transverse hall which was used as a family sitting-room.

It was on the interior woodwork that the greatest care and the most money was lavished. The mantels of even the

most unpretentious houses were very elaborate and were usually of very elegant design.

The mantel shelves are supported by two columns or a group of clustered columns, and the panels decorated with wreaths, festoons, or with classical scenes depicted in moulded putty.

The doors are often surmounted with classical pediments, or the more Rococo broken and curved pediments; the jambs are gables or paneled pilasters, which support a full entablature, the frieze of which is decorated with wreaths and panels or medallions containing various designs in high relief such as dolphins or gorgon's heads.

A later and more classical doorway, very popular about 1810, is flanked by two Ionic pilasters or engaged columns which support a classical entablature, the cornice of which is of reduced proportions. Great attention was given to the stairs. The spandrills were usually decorated with a scroll or anthemium pattern in high relief, and the mahogany rail and newel were inlaid with lighter woods. The interior cornices were treated with great elaboration, though not with the refinement that the earlier mansions exhibit; indeed, the whole interior treatment is in a different style, for lavishness and richness take the place of simplicity and refinement. In no other detail is this so clearly exhibited as in the fire-places. Those of the earlier period are severe, the plain surfaces are never decorated, and the ornament is confined to the mouldings of the shelves and to the frames of the picture panels, which almost invariably reached from shelf to ceiling. The owners of the less pretentious dwellings on the other hand, concentrated their expenditures upon certain details, chief of which were the mantels, where they decorated every available moulding and filled every plain surface with ornament in relief.

The unusual number and renown of the Manor houses and mansions of Albany were due to the fact that the city was the home of many influential families, who attained the greater prominence by contrast with the people of less importance, who were crowded to the background.

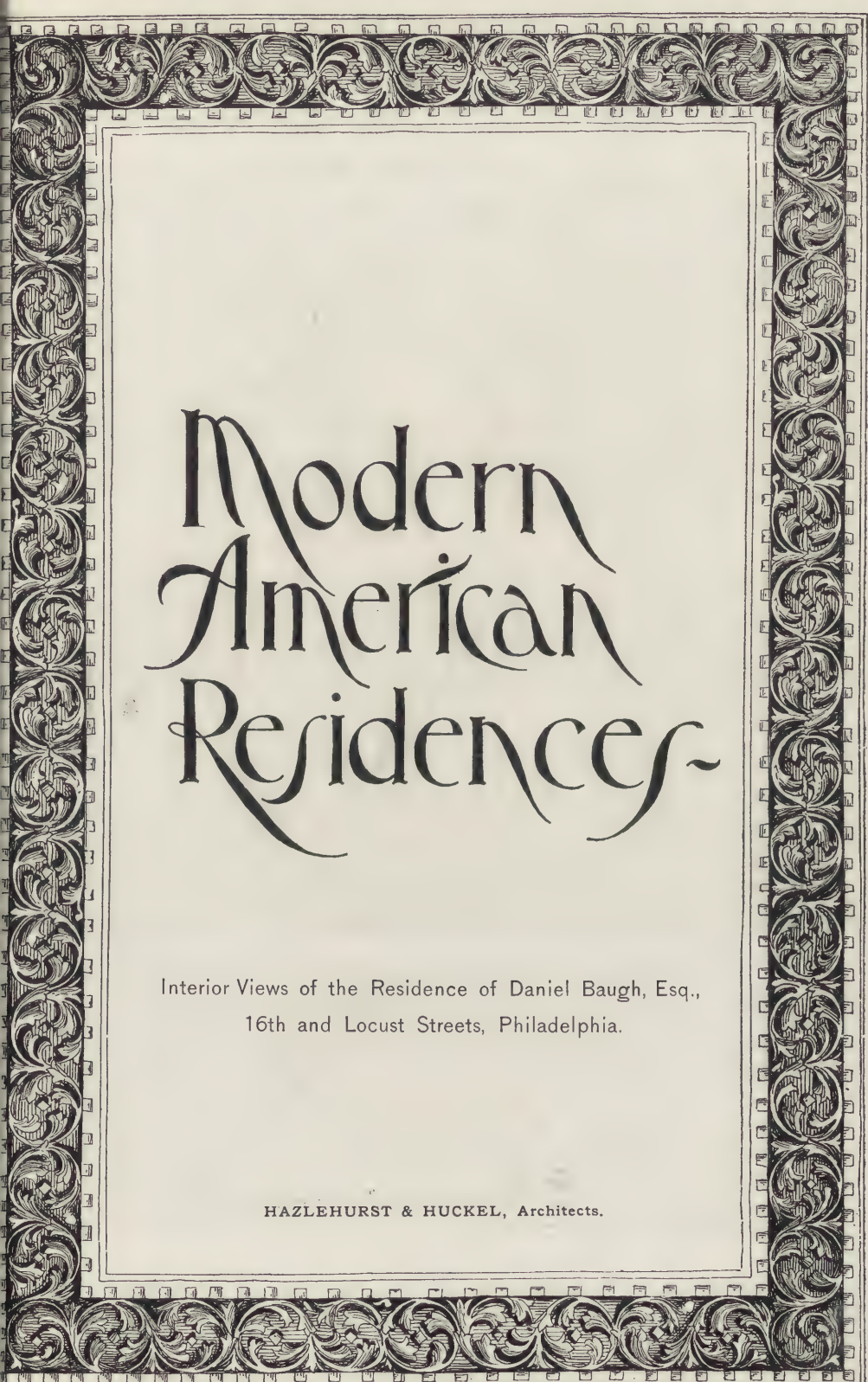
The entire country had been purchased and colonized by one man and remained almost unimpaired in the hands of his descendants for more than two centuries. The title and authority of the original Patroon and his descendants in the male line were unquestioned and to them were paid the honor and deference due to a manorial lord. The people had been originally his colonists and remained his tenants, which added to his wealth while it increased his importance.

At that time all the great families made a feature of intermarriage. the Van Rensselaers, the Schuylers, the Jays, Livingstons and Bayards were all connected by repeated intermarriage and wielded a political power unknown

in these degenerate days. Thus the prominent families of Albany were all connected by marriage and formed an oligarchical aristocracy none the less powerful because untitled. With these conditions it was but natural that during the Colonial days there were erected the many famous mansions for which the city was celebrated, while the great mass of the people occupied comfortable but inconspicuous dwellings. When feudalism had at last given way to democracy and there were more rich if fewer wealthy citizens, the great mansions were no longer built, but the average was more than maintained by the increase in the number of handsome dwellings.

Marcus T. Reynolds.



An ornate, symmetrical Art Nouveau border surrounds the central text. It features intricate, swirling foliate and scrollwork patterns in a dark ink, with a repeating geometric motif along the inner edge of the border.

Modern American Residences

Interior Views of the Residence of Daniel Baugh, Esq.,
16th and Locust Streets, Philadelphia.

HAZLEHURST & HUCKEL, Architects.



STAIRWAY.



STAIRWAY WELL—THIRD STORY.





LIBRARY.





PARLORS.



The inner temple court at Medinet Habou. From the drawing by Mr. John Pennethorne.
(See page 453.)

A DISCOVERY OF GREEK HORIZONTAL CURVES IN THE MAISON CARRÉE AT NIMES.



FOETY-FOUR years have passed away since Francis Cranmer Penrose, then an architect just beginning life, published, with the aid and co-operation of the Dilettanti Society of London, his epoch-making work on the "Principles of Athenian Architecture." It was, therefore, in 1851 that the world of science was first advised of a series of facts regarding the construction of the Parthenon and other temples of the Greeks which are still a perpetual source of wonder and of speculation to the specialist—to whose knowledge even the existence of these facts is still very closely confined.

The observations and measurements of Penrose were undertaken in 1845, and were completed in 1846 and 1847. Up to those years the Greek temple was supposed to be, what to the superficial observer it appears to be. Its horizontal lines were supposed to be

level and were consequently supposed to be straight. Its vertical lines were supposed to be perpendicular. Its corresponding and apparently equal dimensions were supposed to be equal, and its corresponding spaces and distances were supposed to be commensurate. To discover an exact mathematical ratio in its main proportions was the constant effort of the archæologist. The mathematical ratios had *not* been discovered *exactly*, but this was thought to be the fault of the modern and not the fault of the Greek.

On a sudden the measuring rod of Penrose revealed that not two neighboring capitals or *abaci* of the Parthenon are of corresponding size, that the diameters of the columns are unequal, that the inter-columnar spacings are irregular, and that the metope spaces are of irregular width. His plumb line showed that none of the apparently vertical lines are really perpendicular. The columns all lean toward the centre of the building. The side

walls also lean to the centre. The pilasters or *antæ* at the angles of the building lean forward. The architrave and frieze lean backward and away from the imaginary perpendicular. The cornice and the fillet between the frieze and architrave, as well as the acroteria and antefixæ, have their faces inclined forward of the imaginary perpendicular. Finally the main horizontal lines of the building are constructed in curves which rise in vertical planes

larities as are easily detected, or as are obtrusively conspicuous to the eye.

As regards the curves they are inconspicuous to the eye unless sighted for, from some one angle of the building and along the line of the steps, or of the exterior line of the stylobate (the platform on which the temple rests). As viewed even from such an angle they are so delicate as not to be obtrusively conspicuous. As seen from other points of view, especially oppo-



Temple of Theseus at Athens.

to the centre of each side, but these curves do not form parallels.

Three main facts appear throughout all these various phenomena; first, an unquestionable purpose and intention, whatever the purpose and intention may have been; second, an avoidance of all exact ratios in proportions, of all exact correspondences in the presumably equal objects, sizes, and spaces—and of all mathematically straight, mathematically perpendicular, and mathematically parallel lines; third, an avoidance of all such irregu-

larities as are easily detected, or as are obtrusively conspicuous to the eye. As regards the curves they are inconspicuous to the eye unless sighted for, from some one angle of the building and along the line of the steps, or of the exterior line of the stylobate (the platform on which the temple rests). As viewed even from such an angle they are so delicate as not to be obtrusively conspicuous. As seen from other points of view, especially oppo-



Greek temple at Egesta, Sicily. From a photograph showing the curves of the entablature.

tion in the columns we have the testimony of Mr. Penrose that he was months in Athens before he could determine by the eye without plumbing which way a given column leans, and this fact will describe the delicacy of other deviations from the perpendicular. As regards the variations in size of presumably equal objects, or of spacing in presumably equal distances, it may be said that none of them can be definitely asserted to exist on purely ocular testimony, and that the surveyor's work is necessary not only to determine their amount, but even to determine their existence. Here again the difficulty in definite ocular detection depends on the fact that all objects of exactly corresponding size vary in apparent size according to the point of sight. Hence when an element of delicate irregularity of size or

spacing is artificially produced, it is impossible for the eye to avoid discounting this irregularity into perspective effect. Let it be noted here that I do not use the words perspective effect as necessarily implying an increase in effect of magnitude. If a Parthenon capital nearer to the eye be smaller than one next to it, and farther away from the eye, the effect in so far would be to diminish apparent distance between the two capitals, but this would still be an illusive effect of perspective appearance, because the ordinary effects of perspective would prevent the eye from appreciating an exact equality of size if it had existed. Then again, if a spectator be facing two unequal adjacent capitals at exactly equal distances from each, in which case they would naturally appear equal, the difference of size indicates to the eye a

deflection in the line of the building, or, in other words, the spectator appears, in so far, to be nearer to the large capital than he is to the smaller one.

We will now specify some of the maximum cases of irregularity according to the measurements of Penrose, which are given in feet and decimals of a foot. The curve of the Parthenon entablature on the flanks, about 228 feet in length, is .307 (decimals of a foot). At the sides of the building it is .171 in something over a hundred feet. (The flattest curve in Greek art is the entasis of the Erechtheum columns, which is .0195 in 21 feet.)



Illustration showing the curves of the Stylobate of the Parthenon. (From a photograph.)

The Parthenon columns lean .228 in 30 feet, an inclination of one unit in 150 units. In other words, as the columns lean to the centre of the building they would, if sufficiently prolonged in height, meet at a height of 5,856 feet above the level of the pavement. The *antæ* have a forward lean of one unit in 82, and the acroteria and the *antefixæ* have a forward lean of one in 25. A maximum deviation in spacings of the metopes is .325; the measurements of these spaces being four feet and over. The maximum deviation in intercolumnar spacings is over two feet, but this amount of deviation is only found at the angles where the columns next the corner are that much nearer the corner. At these points the spacings narrow from eight feet and a decimal to six feet and a decimal. Aside

from the angle columns the maximum intercolumnar deviation on the north flank is .136, in measurements which are all over eight feet with decimal variations. A maximum deviation in the diameters of columns (of corresponding lines and sizes), is .23 in measurements giving diameters of five feet and a decimal. A maximum deviation in size of the capitals is .312 in measurements of six feet and a decimal.

These instances will give an idea of the amount of actual irregularities according to actual measurement, and we will add that instances of two *adjacent* measurements being equal are almost absolutely unknown. We can occasionally trace some scheme in the variations by comparing two halves of one end, or one side of the building, but when such a scheme appears it does not repeat itself in any two different series of measurements on one side or one end of the building. For instance, in the metopes of the east front the spaces widen from the angles toward the centre, but this does not hold of the intercolumnar spacings, where the only perceptible scheme is that which makes the corner intercolumniations narrower by two feet and a fraction.

That all these remarkable deflections and irregularities were intended has been proven by masonry measurements and masonry observations. Penrose places the maximum deviation due to error or carelessness in the Parthenon masonry, at *one-fiftieth* of an inch. The two ends of the building are of equal width within that fraction. The difference of .02 (inch decimal) in 101 feet, points out "the degree of error which may have arisen from inaccuracy of workmanship in the Parthenon." To quote his own words again: "In the measurement of modern or even Roman buildings, an attempt to obtain the original measurements of considerable distances to the thousandth part of a foot would be fallacious, but in a building of the best Greek workmanship it can be done satisfactorily, if proper care be taken to select such measurements as have been least exposed to the action of the weather; for, owing to the perfect



Illustration showing the curves of the Stylobate of the Parthenon. (From a photograph)

jointing of the stones the errors occasioned by any small shifts, which may have arisen from earthquakes or the violence of human agency, can be corrected most satisfactorily." To illustrate the refinement of masonry jointing, he mentions the observation of Stuart that the stones of the steps under the columns of the Parthenon have actually grown together. "On breaking off parts of two stones at the joint he found them as firmly united as though they had never been separate." This is explained as due to molecular attraction of two surfaces ground together to a very smooth finish, on the principle which explains why two panes of glass may adhere to one another. For an account of the methods by which this wonderfully fine fitting and

jointing were obtained, the work I am quoting must be consulted.

II.

Although the ultimate topic of this Paper is the discovery of Greek horizontal curves in the *Maison Carrée*, at Nîmes, which I made in 1891, I have considered it necessary not only to include an account of the existence of the Greek curves themselves, but also a rather explicit mention of all the irregularities connected with them; not only because incommensurate inter-columnar spacings and leaning faces and members are included in my observations at Nîmes, but also because the existence of the Greek horizontal curves is one of a series of facts whose

startling significance and importance cannot be wholly grasped until all of them are made known. This point again reacts on the importance of all observations which tend to supplement or accent certain explanations of any one set of these phenomena as against some certain other explanation. It will presently appear that my discovery at Nîmes has the result of agitating the still undetermined purpose or purposes of the Greek optical refinements in masonry, and that it tends to minimize the importance of the explanations offered by Penrose in favor of those which have been offered by certain other students. It also, as we shall see, throws a strong side light on the probably Egyptian origin of the Greek curves, and thereby again tends to throw new light on their purpose, on account of certain peculiar features of the Egyptian examples.

We will, therefore, draw nearer to my ultimate aim by degrees, and by considering in the next place the history of the discovery of the Greek horizontal curves, whose confirmation and detailed demonstration it was the great mission of Penrose to accomplish.

The measurement of the horizontal curves was the greatest achievement of Penrose, but their *existence* was not his discovery; as many of the facts were which I have just enumerated. In all cases it is the measurements of Penrose which have *established* the facts as not being accidental and as being in masonry construction, but the observation which discovered the curves was made in 1837 by Mr. John Pennethorne, and in the same year and about the same time the curves of the Parthenon were noticed by two German architects, Hofer and Schaubert. These gentlemen were the first to publish the discovery in 1838. This publication appeared in a Viennese architectural journal, the *Weiner Bauzeitung*.

What is the peculiar constitution of the modern eye which had overlooked the existence of these curves till 1837? What is the peculiar constitution of the modern reader who had anxiously been conning his Vitruvius since 1500, without considering the passage in which this Roman author directs the

construction of these curves? Why is it that when Wilkins made his excellent translation of Vitruvius in 1812 he added a foot note to the passage on the curves, to say that "this great refinement suggested by physical knowledge does not appear to have entered into the execution of the works of the ancients." Why is it that Wilkins did not do in 1812 what Pennethorne did in 1837—that is, *test the author by the buildings?*

Here at least are the facts. It is forty-four years only that the world of science has had the proper measurements of the Greek temples. Stuart and Revett had measured the whole Parthenon as far back as 1756. Lord Elgin and his workmen had had their scaffolds on it in the early nineteenth century, and yet the curves had not been seen. It was not even known until 1810 that the Greek columns had an entasis. This was the discovery of Cokerell, but he did not notice that all lines of the entire building exhibited a similar refinement. Donaldson discovered in 1829 the lean of the columns, but it was left for Penrose to discover the inward lean of the door-jambes and forward lean of the *antæ*, and the inclined faces of the entablature.

Let us then emphasize for a moment the discovery of Pennethorne as leading to all the later ones, and crowning all the earlier ones, and let us relate the way in which he made it. Mr. John Pennethorne, who was then a young architect, had first visited Athens in 1832, and he did not then make this discovery. In 1833 he made a trip to Egypt and was astounded to find in the Theban temple of Medinet Habou a series of convex curves in the architraves of the second court. On his return from Egypt he visited Athens a second time in 1835, again without observing the existence of the curves in Athens. It appears that after his second return to England the passage in Vitruvius attracted his attention. He says that he saw no reason to doubt the implications of the passage in Vitruvius and thus was led to make a third visit to Athens and re-examine the Parthenon. Thus was the discovery made.

1837 were made the observations of Pennethorne and Hofer.

What then is the explanation for the oversight of these phenomena in either case. Clearly there are two. The modern eye is dull and blunted as compared with the eye of the Greek. People *look*, but they do not *see*. But above all the effect is discounted by the eye. Whatever may have been the *purpose* of the Greek curves there are only two possible *effects*. From certain points of view (it may be from all points of view) a perspective enlargement—from other points of view an optical mystification if not a perspective enlargement.

We will illustrate the direct perspective effect of enlargement, by assuming a point of view opposite the centre of one of the sides or of one of the ends of the building. From such a point of view the lines will fall in perspective on either side, and as their change of direction is purely an optical effect, in which each point of the line changes position according to its distance from the eye, it follows that this line must be a curve downward in each direction away from the centre. On this head we can have only one opinion from all experts in curvilinear perspective.

We will illustrate the optical mystification by assuming a standpoint opposite one of the angles of the building. I will not assert absolutely that there is a perspective increment from this position. It is my opinion that the already recognized principles of curvilinear perspective may involve this position, but it would be a position so far not familiar to experts, and I prefer not to debate it here. I will, however, most positively assert that from the given point of view one of two results must follow, either a direct perspective increment, or else an optical mystification owing to the contradictory optical effects of two sets of phenomena—one of which effects is artificial, while the other effect is natural.

For our present purpose it makes no difference whether optical mystification or perspective increment, or both, are the results of the Greek horizontal curves. My present argument is simply to the end that in either case the

effect is discounted by the eye. The cause is therefore not perceived.

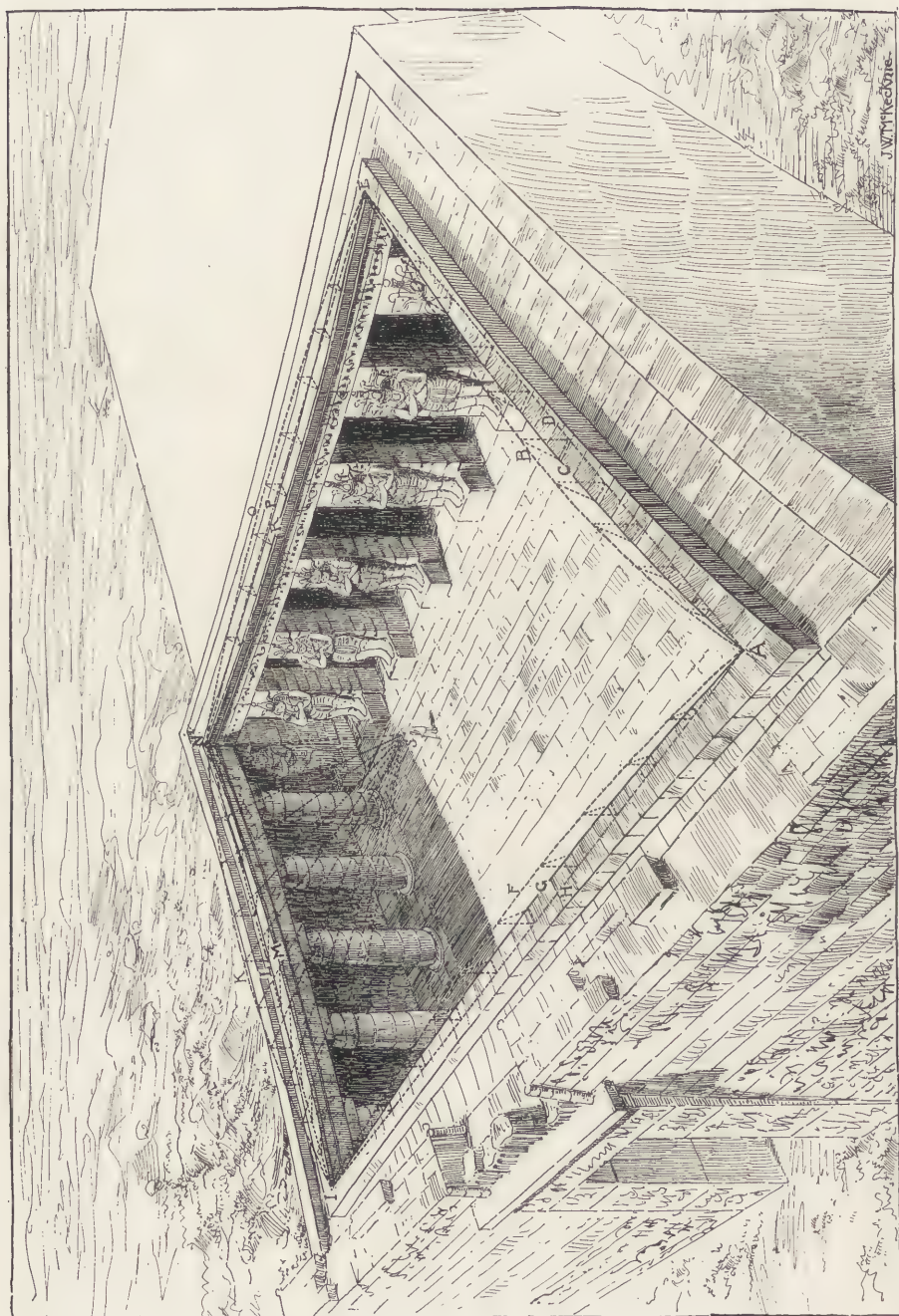
We may, therefore, assign three causes for the long failure of the modern eye to detect the Greek horizontal curves: First, inferior sharpness of vision and inattention to art forms. It is admitted that Greek art and Greek taste were superior to our own. This amounts to admitting that the Greek eye was more acute and more highly trained. Second, the effects of the curves, whether they be perspective effects or simply mystifications, or both, tend to prevent the detection of the underlying facts and causes. Third, the curves are so delicate as not to be obtrusive to the eye under any circumstances.

We are prepared therefore to understand why the curves of the *Maison Carrée* have not been noticed sooner.

I have so far carefully avoided making any reference to the *purpose* of the Greek curves. I have only asserted that they have certain *results*, without debating the question whether these results were intended. It will now bring us nearer to our ultimate topic and aim, if I announce my own observations for horizontal curves in Egyptian temples and connect them with those of Mr. Pennethorne, which I have mentioned for the Theban temple of Medinet Habou.

III.

It is then a fact to be once more noted that the discovery of curves in Greek temple construction was preceded by a discovery of curves in Egyptian temple construction, and that the same person made both discoveries. It is also a fact to be noted that the curves of the Greek temples (as so far discussed), are curves in elevation, curves in the direction of the altitude, while the curves at Medinet Habou are curves in plan, convex to the line of vision. They are curves lying in horizontal planes as distinct from curves lying in vertical planes. It would appear reasonable, considering the growing conviction of scholars that Egyptian art and culture had in many important ways influenced the Greeks



Bird's-eye view of the inner temple court at Medinet Habou. The lines A, F, I, K, N; N, O, E, and A, B, E, show the optical effects of the cornice curves from various points of sight. Drawn by John W. McKee.

that any theory as to the purpose of the Greek curves should be a theory which would also include Egyptian curves in its explanation, but this has not been the case, strange to say. The reasons for this are not only curious, but they are also important to our argument.

Mr. Pennethorne's discovery of the curves at Athens was not immediately published by him, aside from a pamphlet printed for private distribution, nor was it published by him for many years. His own publication was delayed until 1878, twenty-seven years after the publication of Penrose, and forty-one years after his own discovery. This delay appears to have been owing to lack of encouragement, in his special studies, and to the abandonment for many years of his chosen career. He tells us that he took up the pursuit of agriculture soon after his return to England. Most curious of all, he did not know until 1860 that the curves which he first discovered had been measured by Penrose in 1846. It was not till 1860 that the work of Penrose published in 1851 came to his knowledge. It was not until 1878 that he announced the curves at Medinet Habou, and meantime all the theories so far made known as to the curves of the Parthenon had made their appearance and had been advanced without this important knowledge. Not only that; when Mr. Pennethorne did publish, it was in a book on "The Optics and Geometry of Ancient Architecture," which costs a large sum (thirty-five dollars), and which, being a specialist book devoted to Greek architecture, has apparently so far not come to the notice of one single Egyptologist. There is not a single book, guide-book or any book otherwise known to me, which relates to Egypt, which mentions the curves at Medinet Habou. I have never met an Egyptologist who knew of their existence, and it appears to have been reserved for me to make the first observations and measurements for curves in three courts at Luxor, in the great court at Karnak and in the court at Edfou.

Mr. Pennethorne tells us in 1878 that he did not, when in Egypt, give the

further attention to the subject and attach the importance to it which it deserved, but the temple at Edfou where I have observed the curves was not cleared out till twenty-seven years after Pennethorne was in Egypt. Down to 1860 this temple was covered by an Egyptian village. The courts of Luxor were not cleared out till 1891, the year when I was in Egypt, and no one could have previously made measurements there. As for the court of Karnak, it is still buried in rubbish and observations can only be made in an imperfect, but I think convincing, way on the lines of the architrave.

It is, however, a most significant thing that the curves at Medinet Habou are generally unknown, in 1895, to the world of science and of travel. They amount, on the short side of the court, to 8 inches deflection in the architrave in a length of 80 feet 9 inches and, on the long side, to $4\frac{1}{2}$ inches in a length of 104 feet 9 inches. They can be sighted on the roofs of the portico with the greatest ease and are most positively wholly constructive and not accidental, as already shown by Pennethorne. And yet I am acquainted with at least one very sharp-sighted architectural expert, who has been in this court without noting the curves and I am acquainted with many travelers who have not noticed them. Is it not then clear that all these persons have discounted the effect of the curve? What this effect is for standpoints nearly opposite the centre of any one side for that given side is indicated by one of Mr. John W. McKecknie's drawings herewith. This gentleman is an expert and instructor in perspective and the reader may be assured that there are no uncertain theories whatever involved in this picture. Remember, we are not debating whether the Egyptian architect intended this effect. We are not even debating, at this moment, whether the construction is accidental. We are concerned with the actual optical effect of the given phenomenon. All architectural lines which are curved in horizontal planes, convex to the position of the spectators, produce the effect of curves in elevation, as shown by the diagram. At an angle of 45 degrees,

8 inches curve in plan gives an effect of 8 inches curve in elevation. Inside the angle of 45 degrees, the apparent height increases rapidly and is something enormous on near approach, according to the dictum of another expert in perspective. In order to relate our text to the diagram, we are speaking of points of vision opposite or nearly opposite the centre of any one side of the court. In such a position, the natural downward direction of the architrave in perspective is exaggerated by two causes—first, there is the exaggeration in height at the centre; second, the receding line of the convex curve gives the effect of an extra downward bend to the line, as shown by the bird's-eye view.

There is a similar result from other points of view, possibly complicated by optical mystifications due to the contradiction between effects of natural perspective and the effects of artificial arrangement. The grand fact remains that a convex curve of 8 inches in 84 feet in the architraves at Medinet Habou has passed wholly unnoticed by an enormous number of modern travelers and that it is wholly unknown to Egyptologists as far as I am aware. I should be able to name several such, and the absence of literary mention in books on Egypt, which are generally so quick to point to connections with Greece where they are obvious, is something phenomenal. I will not say at present that the Egyptian builder intended an optical illusion but I will definitely say that he did produce one. Certainly not one man can gainsay me who has been in this court without perceiving the curves and among those men is the leading perspective expert of this country.

IV.

All these explanations seem to me of value as helping us to understand why the convex curves in the architraves of the *Maison Carrée* at Nîmes were not measured or noticed as in construction till the year 1891, when I had the pleasure of making this discovery. We understand, for instance, that scholars had studied and measured the Parthenon for all the years between 1756 and

1837 before its curves were noticed, and we understand that the existence of curves in plan in ancient architecture had been wholly overlooked, as distinct from the existence of curves in elevation.

No doubt an occasional student or observer has noticed these curves in the *Maison Carrée* and set them down to the score of masonry displacement, a fact so common in old buildings that the first thought of every architect and builder would naturally be that the timbers of the roof had thrust out the cornice and that the curve was not in the original construction. This is why I took pains to arm myself, when at Nîmes, with certificates from the official architect of the city and from his predecessor in office; the latter being especially familiar with the roof and upper masonry of the *Maison Carrée*; to the effect that these curves are in the masonry construction, although these gentlemen had not previously observed the fact.

Herewith are the certificates:

"The undersigned, Eugene Chambaud, ex-architect of the City of Nîmes, after examining the curved lines of the *Maison Carrée* with Mr. Goodyear, has verified the existence of these curves as being in the said construction: with the proviso that the curve on the east flank has been exaggerated by a thrust of the roof timbers; but also verifying the fact that there has also been a curve on this side in the original construction—considering that the line of bases in the engaged columns is curved on this side as it is on the other, and that there has been no thrust here; considering also that the movement (owing to thrust) is far from having been sufficiently great to produce the curve of the cornice. He considers the theories of Mr. Goodyear regarding the perspective effects of the curves as a reasonable one, and remarks that the theory regarding the perspective effect of a convex curve is new but possible. He has observed with him that the variations of intercolumnar spacing on three sides of the monument would undoubtedly have a perspective effect, according to Mr. Goodyear's ideas. The joints of the cornice on the west side where there is a curve of $11\frac{1}{2}$ centimetres, as measured by Mr. Goodyear, are intact, with one exception which is not important for the question of the curve.

NÎMES, FEB. 23, 1891. E. CHAMBAUD."

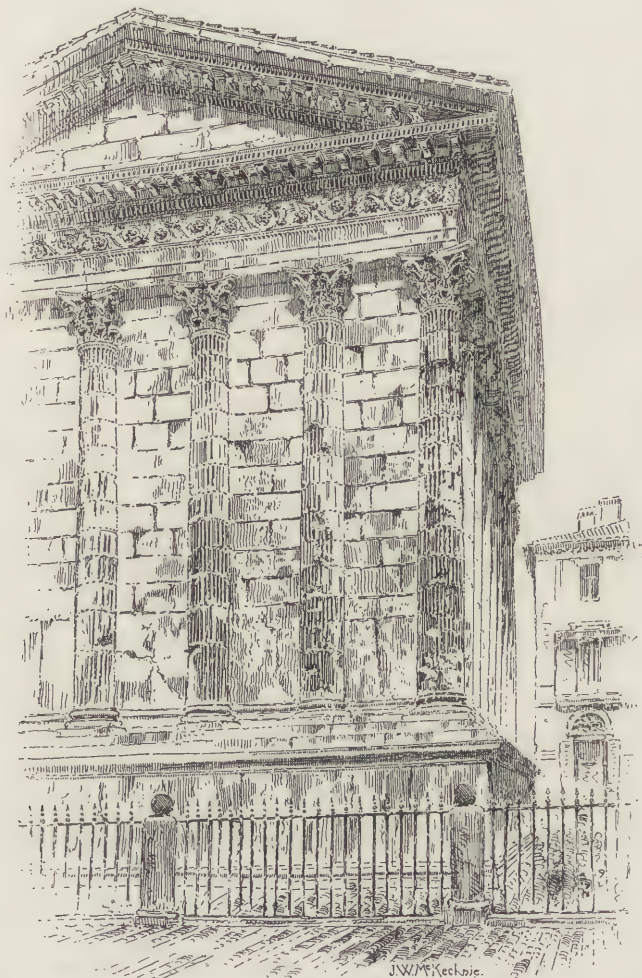
"FEB. 20, 1891.

"The measures herewith have been taken with the assistance of Mr. Augière, architect of the City of Nîmes. He witnesses to having observed the curves with Mr. Goodyear, and he verifies the fact that there has been no thrust in the cornice of

the west flank. As Professor of Perspective he wishes to say that he considers the theory of Mr. Goodyear regarding the perspective effect of a convex curve in plan new but reasonable. As to the effect of a concave curve in plan it is familiar to experts in perspective.

A. AUGIÈRE."

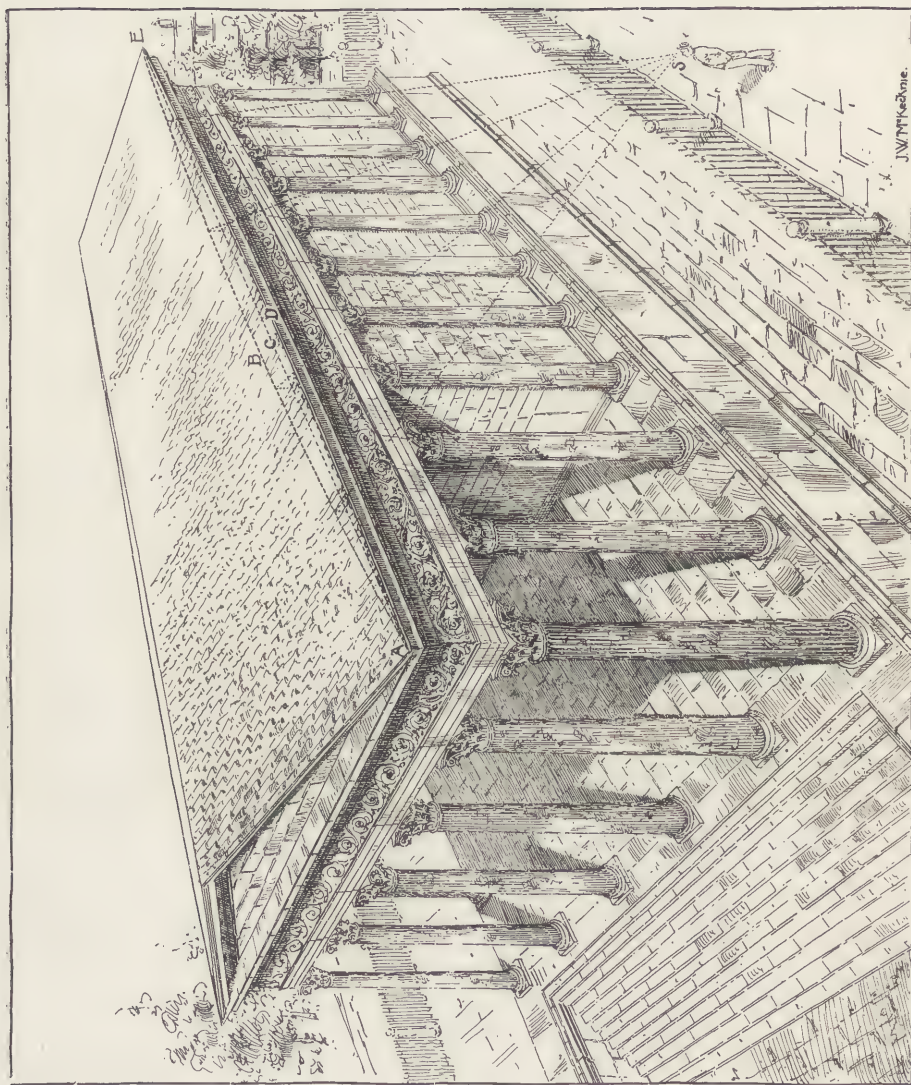
dropped a plumb line to the pavement below. The curves of the cornice, wholly due to masonry construction, are in horizontal planes convex to the position of the spectator, and measure about five inches.



View of the *Maison Carrée* at Nîmes. From a photograph taken for the author to show the curve of the cornice.

I must add that on one side of the *Maison Carrée* the curve has been exaggerated by a subsequent movement of the masonry, and that on this account I confined myself in measurements for the cornice to that side where the masonry is in thoroughly good condition. For measuring the cornice curve I employed tin-roofers, who scaled the building by ropes and

I also made measurements on the line of the stylobate which show slight corresponding curves in the line of the temple wall, and of its engaged columns along the plinth line. I have no hesitation in saying that even on the line of bases of the engaged columns resting on the stylobate there are slight convex curves in both temple walls on the long sides. It is also cer-



Bird's-eye view of the *Maison Carrée*, showing the optical effect of the cornice curve—A, B, C, D, E, the actual curve; A, B, E, the optical effect, from standpoint S. Drawn by John W. McKim.

tain that the great increase of the curve above was obtained by leaning out the walls and engaged columns at the centre.

It now remains to say what is the importance of this observation on the *Maison Carrée*. First, it overthrows the presumption of scholars that the Greek curves were unknown to the time of the Roman Empire, whose taste has been so far considered too coarse for this refinement. This observation, therefore, carries the history of the Greek curves from the time of the fifth century before Christ, down to the time of the second century after Christ. It extends the life of this

exaggerate the effects of curvilinear perspective and thus give increased dimensions to the building when seen from a point of view facing the centre of either side, but he also considered them as giving life and beauty to the building, and as superior to the more monotonous and colder effects of mathematically straight lines. This latter view is the one which has mainly figured in the standard compendiums of the Germans; for instance, in those of Kugler, of Schnaase, and of Jacob Burckhardt. It has not been abandoned by the publication of Thiersch,* whose essay is the only contribution to the optical and mathematical questions in-



The *Maison Carrée* at Nîmes.

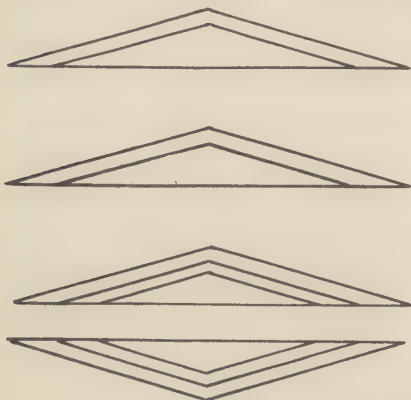
Greek refinement seven centuries later than as previously known. Second, it reopens the question as to the purpose of the Greek curves. The explanations which have been previously offered must be revised or supplemented to some extent, because the explanations previously offered have referred to curves in elevation and not to curves in plan.

This brings us back to the explanations so far offered for the Greek curves. We have seen that the German architect Hoffer was the first to announce the Parthenon curves in publication. This was in 1838. Hoffer's explanation was that the curves of the upper lines were intended to accent and

involved, aside from those of Penrose and Pennethorne. Thiersch, however, in the main, accents and develops the point of view of Penrose. The views of the latter as to the theory of the curves have naturally been most familiar to English and American students and as his measurements are our only authority for the facts, his theories have naturally been generally accepted by his English and American readers. The explanation of Penrose moves from the accepted fact that there is a tendency to optical downward deflection in the straight line of an entablature below the angle of

**Optische Täuschungen auf dem Gebiete der Architectur.*

a gable or pediment. It is his theory that these lines of the entablature were accordingly curved upward in order to counteract this defection. As to the curves of the flanks Penrose regards



From Thiersch, *Optische Täuschungen auf dem Gebiete der Architectur*. Diagrams illustrating the optical deflection of straight lines below the angle of a gable. The upper line appears to be curved downward and is really straight. The line next below appears to be straight, but is, in fact, curved upward. In the two lowest diagrams the lines which appear to curve away from one another are, in fact, straight and parallel.

them as a consequence incident originally on the methods pursued for the entablatures under the pediments and then adds :

"We may attribute the use of this refinement to the feeling of a greater appearance of strength imparted by it, to the appreciation of beauty inherent in a curved line and to the experience of a want of harmony between the convex stylobates and architraves of the front and the straight lines used in the flanks of the earliest temples. And farther, if we may suppose the first examples of

its application on the flanks to have occurred in situations like those in which the two temples above mentioned (viz. the Parthenon and Olympian Jupiter Temple) are built, the presence of a delicate, but not inappreciable curve in what may be considered as Nature's great and only horizontal line may possibly have combined with other causes to have suggested its use."*

Although Penrose is distinctly of the view that the hardness and dryness of modern copies of Greek architecture are due to the absence of these refinements, his effort is in each case of the various refinements quoted at the opening of this paper, to look for an optical correction as distinct from an optical illusion; and yet for the most important curves of all, viz. : those of the long sides of the temple, he does not even suggest that an optical correction was needed.

We come finally to the views of Boutmy, *Philosophie de l'Architecture en Grèce*, 1870, who returns to and revives the idea of Hoffer of a perspective illusion, but still confining his explanation to an effect from one point of view, viz. : that opposite to the centre of the sides or ends of a temple.

Now, the importance of the observation of curves in the *Maison Carrée* is that they were not applied to the pediments at all, but exclusively to the sides. The theory of an optical correction is therefore insufficient, and the theory of a perspective illusion appears

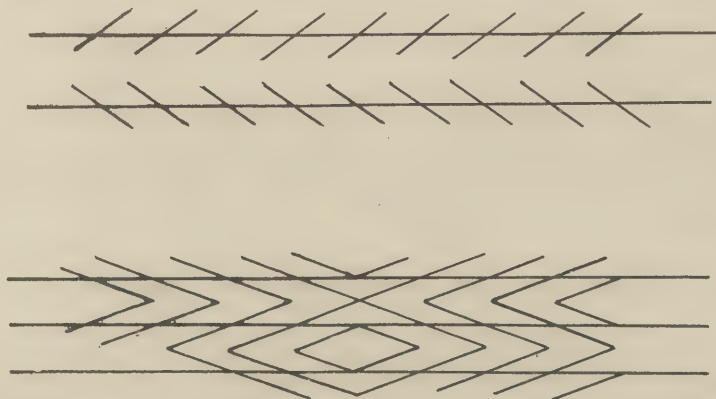
* The line referred to is that of the sea along the horizon.



Diagram showing an optical effect of inequality in straight lines which are in fact of equal length.
By John W. McKecknie, perspective expert.

to be the only one left us; but this theory has never previously been announced as an explanation for the construction of curves in plan convex to the point of vision. It is, however, clear that all curves in plan convex to the line of vision produce an effect of curves in elevation. I am indebted to Prof. Wm. R. Ware, of Columbia College, for the information that at an angle of forty-five degrees a curve of five inches in plan, when not perceived by the eye, will produce an effect of five inches curve in elevation. From all points of view further removed, the effect will be less, but the builders of the *Maison Carrée* and of the second court of Medinet Habou seem to have

Medinet Habou, but we have seen that, owing to the late announcement by Pennethorne (1878) and the general oversight by Egyptologists of this announcement, their existence even here is still generally unknown to science. A few words, then, as to my own observations in Egypt. My trip here was made in the interest of other studies and the subject of lotus ornament and its influence on Greek patterns. My measurements and observations were consequently hurried and imperfect. Still, here are the facts. Although the great court at Karnak is so filled with rubbish that one can climb in several places to the top of the architraves. I am able to



Diagrams showing an optical effect of curves and obliquities in lines which are in fact straight and parallel.
From Thiersch, *Optische Täuschungen auf dem Gebiete der Architectur*.

purposed to make this good by making the curves correspondingly heavier to begin with.

In the Parthenon the curve is under 4 inches in 228 feet. At Medinet Habou the heaviest curve is 8 inches in less than 100 feet, and at Nimes it is nearly 5 inches in about 100 feet.

To the above points we must now add the general revision in the attitude of archæology to the question of curves in ancient architecture, which is probably involved in my observations for curves in plan in the courts at Karnak, at Luxor and at Edfou. The conservatism and habits of repetition in Egyptian art would under any circumstances make it highly improbable that the curves in Egyptian architecture were confined to the one temple of

announce, as far as these architraves are concerned, that curves convex to the court are visible. At Luxor the columns of the largest court on two sides have leaned forward so far as to threaten downfall and have been shored up accordingly by beams during and since the excavations not quite completed in 1891. Measurements taken by me in all three courts at Luxor show curves in all lines of columns at the bases, all convex to the centres of the courts, varying from $1\frac{1}{2}$ to 7 inches. It is clear at Medinet Habou that the lower curves in the lines of the basis and in the lines of columns near the bases were comparatively slight and that the curve was obtained in the architrave and cornice (as it was at Nimes) by leaning

forward the centre columns. This would explain the movement of the masonry which has required the columns at Luxor to be shored up by timbers. All earthquakes and other forces tending to disintegrate these buildings, such as pulling down and destroying the accessible parts of the temple, would tend to exaggerate the lean of the centre columns and bring about the threatened downfall now imminent at Luxor. My observations at Edfou point the same way. On all four sides of the court I have measured curves in the line of the bases, of $1\frac{1}{2}$ inches on each side of the court. Very heavy curves, of 10 inches in one case, appear in the cornice lines, but the cornices have moved forward and the original lean of the centre columns has been exaggerated by accidental tipping. The joints of the columns have parted at the rear and it will require careful examination and survey at Edfou to show how much of the upper curve is due to movement of the masonry and how much is due to construction. One main fact remains to be mentioned for Egyptian temples. Although their curves have so far been utterly ignored and neglected, excepting by Pennethorne and myself,* the existence of other perspective illusions is admitted for Egyptian temples by Egyptological experts.

It is noted by a number of authors that the temples were generally built with pavements rising toward the sanctuary and with roofs gradually lowered in the same direction, and that this was done for perspective illusion. Maspero is one of the authorities who mentions this. Mentions are also made of this by Rawlinson and by Professor Reginald Stuart Poole.

V.

Although these various observations point to a perspective purpose in the Egyptian and Greek curves, I do not wish to appear to antagonize the view that optical refinements were used in Greek architecture to correct

optical illusions, for I believe that they may have been so used; but I wish to point out that the theories which are confined to correction are insufficient to meet all the facts, and that the theories which have considered the *creation* of optical illusions to have been one purpose of the refinements are now materially strengthened.

The existence of a temple at Nîmes having curves on the flanks without having them in the entablature of the pediments tends to antagonize the view of Penrose that the correction of a downward optical deflection below the pediment was the first cause of the introduction of the curves in Greek architecture. The temple of Neptune at Paestum is quoted by Penrose, in support of his view, as having only curves under the pediments, but strange to say this temple at Paestum has been subsequently announced by Jacob Burckhardt to have convex curves on its flanks in horizontal planes.* This observation is also quoted by Thiersch. Thus I close my Paper by pointing out that we have at Paestum one ancient Greek precedent for the curves in plan at Nîmes, and that both point to Egyptian influence. The city of Nîmes was settled by a colony of Alexandrian Greeks from Egypt. It appears therefore probable that the curves in Greece were derived from Egypt and had the same purpose, but that the curves in the Egyptian courts were generally changed to curves in vertical planes by Greek art. This was a more refined expedient for attaining the same end, less conspicuous in buildings using colonnades for exterior porticoes as distinct from buildings using colonnades for the interiors of courts. It is comparatively easy to sight for a bulging curve on the exterior of a building, but more difficult to sight for it in the interior of a court. I was not able, for instance, to sight for the curve at Medinet Habou without going on the roof of the portico, but at Nîmes I was able instantly to sight for the bulge on the long sides from the level of the street. These facts, therefore, coincide with the view that the general purpose of

* I must make an exception for Prof. Allan Marquand, of Princeton, who has briefly noticed in the *Am. Journal of Archaeology* the discovery of Pennethorne at Medinet Habou.

* Der Cicerone.

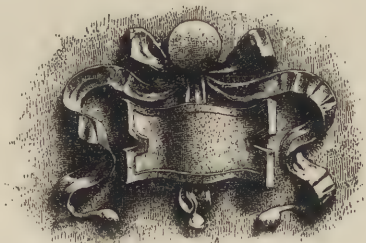
the curves in Greek art was connected with the wish to have them inconspicuous, and that the curves at Nîmes represent either a direct influence from Egypt or the coarser taste of the Roman period. On the other hand the flank curves of the Neptune temple of Paestum, which is a very early Greek building, will represent the period of direct Egyptian transmission to Greece.

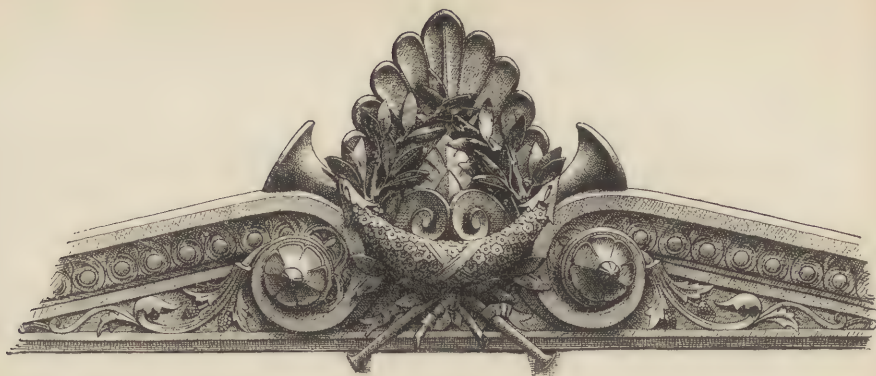
As it is generally conceded that Vitruvius drew his matter from earlier Greek authors whose works have perished and that he did not always fully comprehend the ideas of his sources, I have omitted any argument concerning his direction that the stylobate curves are to prevent an effect of "alveolation" (*i. e.* downward deflection) at the centre of the stylobate. The only modern author who has attempted to explain this direction by optical theories is Thiersch. This author gives his reasons for supposing that a spectator standing near an angle of the stylobate *and below the level of its platform* might experience an optical effect of downward deflection in the lines of the stylobate which an upward curve would correct, but inasmuch as a bulging curve in plan could not correct this effect for the standpoint near the angle, I have not considered his theory in this Paper and I only mention it as giving one more illustration of the new light thrown on the Greek refinements by the discovery of curves in horizontal planes. There

are very valuable remarks in Boutmy's work as to the general unreliability of Vitruvius for a comprehension of the Greek curves and one purpose of this Paper is to accent the value of Boutmy's contribution to the philosophy of Greek architecture. His work also contains quotations from Greek authors on the optics of architecture showing that intentional optical illusions and intentional optical corrections were alike familiar to them.

There is one thing more to be said before I close. The credit for the original suggestion that there is a historic connection between the Greek curves and those of Medinet Habou belongs to Mr. Pennethorne, as does the credit for both discoveries. The wholly original part of this Paper as regards historic facts is that which points to the fact that two classic buildings—one early Greek at Paestum and one late Roman at Nîmes—show convex curves in plan which are *identical in character* with the curves in Egypt. The wholly original part of this Paper as regards observations is that which relates to Nîmes, Karnak, Luxor and Edfou. The wholly original part of this Paper as regards the effect of the Greek horizontal curves is that which shows the optical results in actual historic buildings of convex curves in horizontal planes. I am willing to leave the question of purpose to the expert and to the general reader.

Wm. Henry Goodyear.





LINEAL PERSPECTIVE — ELEMENTARY PRINCIPLES.

PART I.

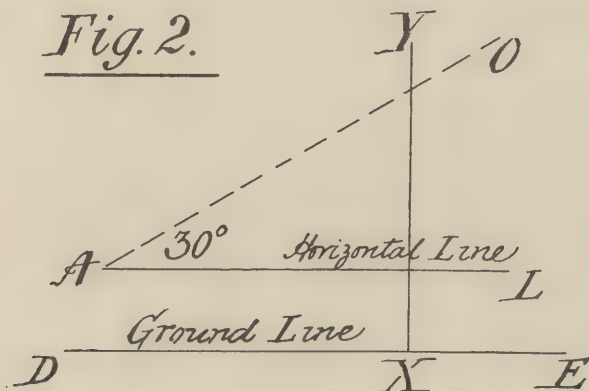
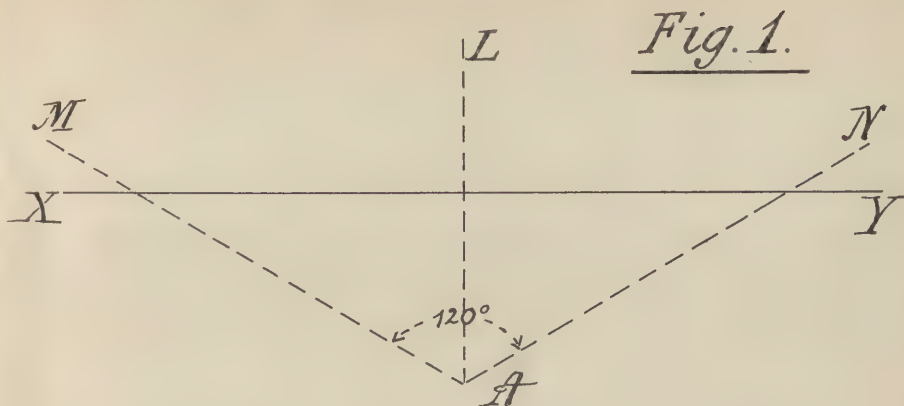
THE subject of Perspective is one which is approached from very different points of view by the architect and by the pictorial artist. The first considers it as the mechanical means by which, from given plans and elevations, he can construct a pictorial representation of the building which they represent, while the other looks upon it as comprising a series of laws with which his drawings must conform if they are to be pleasing to the eye. To write upon it, therefore, to meet the needs of both these classes of readers at the same time, is somewhat difficult, and it has been thought best, in attempting to accomplish this task, to consider it as a branch of solid geometry, taking the scientific rather than the architectural or the artistic point of view, and laying down, as clearly as may be, the laws which underlie it.

Speaking scientifically, then, and using the language of geometry, Perspective may be defined as a convergent projection of an object upon a superficies. The superficies (or surface) may, theoretically, be curved or plane, and, if plane, inclined at any angle in any direction. Almost invariably the projection is made upon a plane vertical surface (a piece of paper or a canvass held vertically), but there are notable exceptions as in the well known pictorial diorama, where the projection

is made upon a vertical cylindrical surface, and in the photographic camera when the operator tilts his camera and produces what looks like a distorted picture, however scientifically correct it may be.

Farther than this the architect must bear in mind that in the mechanical production of a perspective picture there is no account taken of *focus*, or, rather, the want of it, which goes so far to give reality to a picture; and, on the other side, a painting or drawing may have the hazy, ærial effects of distance properly graded with the sharp precision of the prominent and near objects, and yet be faulty from want of observance of these same rules of perspective, neither of itself being sufficient to indicate the difference between near and distant objects as seen by the human eye.

Taking Perspective, then, in its most usual but very limited sense, to be a convergent (or divergent) projection of an object upon a plane surface, it still has further limits in its applicability—limits which do not apply when the projection is made upon cylindrical or spherical surfaces. These cases are so rare, however, that in these articles plane surface projection alone will be treated; and the primary limitation here is that of the angle of vision within which man's eye is capable of seeing with tolerable distinctness.



This is shown in Figs. 1 and 2. Fig. 1 is a plan of a vertical sheet of glass, XY , through which a person is looking who is standing at A . He is supposed to be looking directly in front of him towards L , the line AL being at right angles to the plane of the glass, XY . It will be found then that he will only see, with even tolerable clearness, objects which lie within the angle NAM , which is an angle of 120° ; or, in other words, he can only see within an angle of 60° on either side of him. Some people can see within a slightly wider angle, but even if so, everything beyond is extremely hazy, as, in fact, it has become long before this limit is reached.

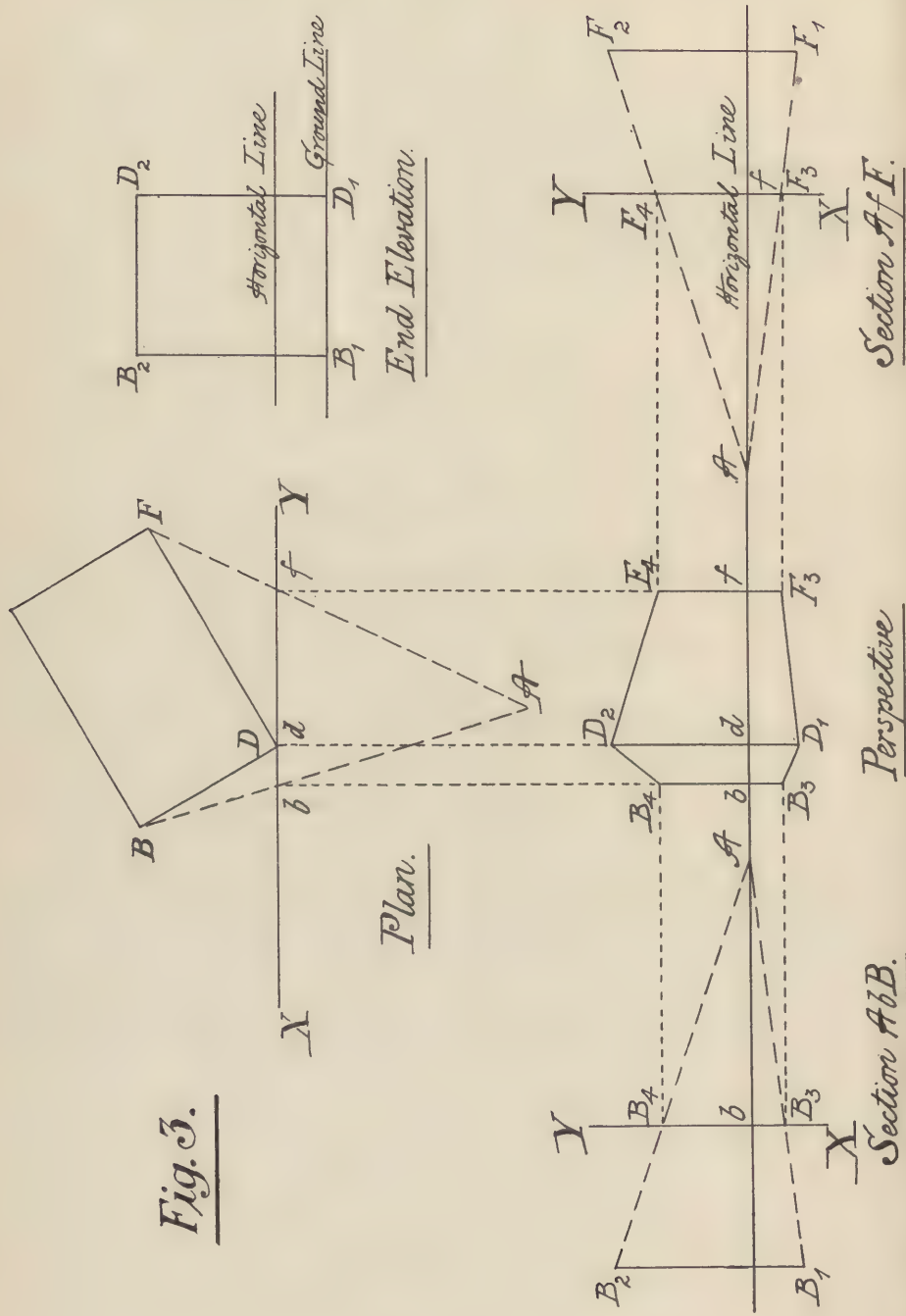
Similarly with regard to vertical angles (see Fig. 2). A person having his eye at A , some little distance above the ground line DE , and looking straight in front of him along the line

AL , through the sheet of glass shown in section at XY , can only see objects above the level of his eye which fall within the angle NAL , which is but an angle of 30° , and at the same time he can see downwards within a similar limit.

It is better in practice to confine one's work within much smaller angles, as an appearance of distortion is set up as the wider limits are reached, and in fact that draughtsman is wise who limits himself to an angle of 30° to either right or left of the line drawn at right angles from the eye to the picture plane (as the vertical intercepting sheet of glass is called), and to an angle of 15° either upwards or downwards from the horizontal.

Remembering the definition of Perspective, and conforming with the limits mentioned above, it is possible already for a student to make a perspective

Fig. 3.



drawing if supplied with plans and elevations of any simple object by the laborious process of direct projection both of lengths and heights. Such a simple projected perspective is shown in Fig. 3, fully worked out, and the diagram and its explanation are worth following closely, as, if understood, any other problem, even of considerable complexity, can be solved by anyone of moderate ability who does not grudge the necessary labor involved.

Taking the plan first, it is seen that B D F represents a rectangular block, the point of sight, or position of observer, and X Y the plane upon which the projection (or perspective drawing) is to be made. The position of this plane has been so chosen that it touches the point D, this being a device commonly adopted by architectural draughtsmen to diminish their labor, but by no means necessary nor always advisable. The projection of D upon X Y is therefore at the same spot, *d*.

The projections of B and F upon the plane are obtained by joining B A and F A, cutting X Y in *b* and *f*. The points *b*, *d* and *f* therefore are the projections upon the plan of the *picture plane* of the points B, D and F.

Lines are now drawn vertically down from *b*, *d* and *f*, and the perspective representation of the angles of the building will be found somewhere in these vertical lines.

Referring to the "End Elevation," it will be seen that the rectangular end, B₁, B₂, D₂, D₁, is cut at about one-third of its height from the ground line by the *horizontal line*—drawn horizontally at a height above the ground line which is equal to the height of the eye of the observer above the ground.

Another *horizontal line*, to represent this one, is now drawn through the vertical lines projected downwards from *b*, *d* and *f* to be made the basis of sections along the lines A *b* B and A *f* F, and of the eventual perspective drawing. First, a section along the line A *b* B is set down, the distances and heights being obtained from plan and elevation, the line B₁ B₂ being similar in its dimensions, both above and below the horizontal line, with the

similarly lettered line on the elevation. By joining B₁ and B₂ to A on the section the picture plane, X Y, is found to be cut by the converging lines at B₃ and B₄. This is the true perspective height, with relation to the horizontal line of the angle B₁ B₂; and by drawing horizontal lines through B₃ and B₄ until the vertical line downwards from *b* on plan is reached in the similarly lettered points, the true perspective representation of the angle at B is obtained.

By making a similar section along the line A *f* F on plan and similarly projecting, the true perspective representation of the angle at F is obtained at F₃ *f* F₄; and the representation of the angle at D is got by direct scaling of the heights D₁ *d* D₂ from the elevation.

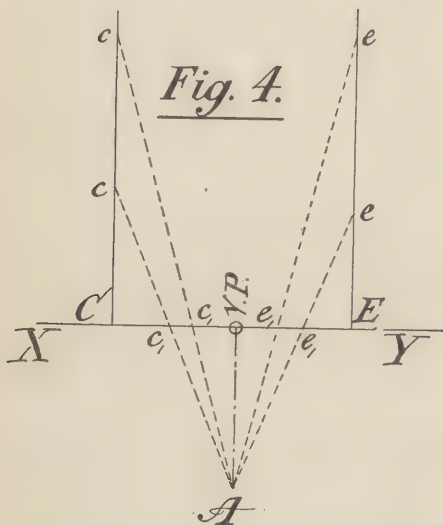
It is now only necessary to join B₄ to D₃, D₂ to F₄, B₃ to D₁, and D₁ to F₃ to obtain a complete perspective representation of the block—the fourth angle being, of course, hidden from the spectator.

Of course it is quite possible for all these operations—the making of sections along each of the converging lines, and even the erection of a perspective—upon separate pieces of paper, all heights and distances being transferred by means of measurements marked upon the edges of paper strips instead of being directly projected by vertical and horizontal lines; and, in point of fact, this is absolutely necessary where many sections have to be made along many different converging lines. It is usual, however, for practical workers to avoid making these sections almost entirely, as they involve much labor; but it will be seen that from the rules already laid down it is possible to obtain the perspective representation of any number of points of which the plan and elevation are both known, and consequently of a building of any degree of complexity of which there are complete plans made. So far as projection from the plan itself is concerned, however, the method here shown of projecting from the various points to A, so as to cut the *Picture Plane* (XY), is that almost universally adopted.

It is now necessary to observe and consider various phenomena which have

become apparent. While the representations of the vertical lines at the angles have remained vertical, the representations of the horizontal lines are seen to converge— $D_1 B_2$ and $D_1 B_4$ towards the left, and $D_1 F_3$ and $D_1 F_4$ towards the right; and, if produced, it will be found that each pair of convergent lines will meet in some point in the *horizontal line*—which point is known as the *vanishing point* or V. P.

The reason for the lines converging

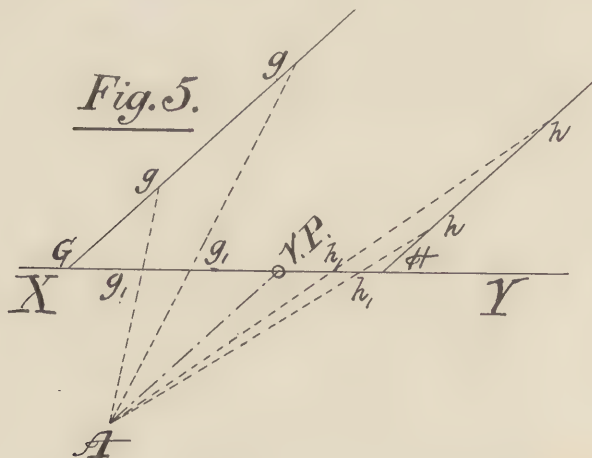


thus is not far to seek. In Fig. 4 there are shown two parallel lines Ccc and Eee on plan, drawn at right angles to

the picture plane $X Y$, the spectator being so placed that another line, drawn parallel to these from his Point of Sight A , will cut the $X Y$ between C and E . Where it cuts will be the $V P$; for, as lines drawn from A to various points in the line Ccc , the representations cc of these points on the $X Y$ come nearer and nearer to the $V P$ the further and further away the points taken are from the $X Y$, and it is the same with points in the line Eee . At length, as these lines are prolonged indefinitely, the representation of points in them becomes infinitely near to the $V P$, and, though never actually reaching it, may be said to do so without error to our finite understandings. As usually expressed, the perspective representations of the lines Ccc and Eee are said to vanish in the $V. P.$

Similarly, if the lines be drawn, as are Ggg and Hhh in Fig. 5 at any angle to the picture plane other than a right angle, their representations again vanish in the $V. P.$, which is again ascertained by drawing a line from A parallel to Ggg and Hhh until it meets the $X Y$.

Precisely the same thing happens if a section be taken, as in Fig. 6. The lines Xxx along the ground, and Mmm parallel to the ground (or horizontal), vanish in the $V. P.$, which is obtained by drawing a line from A horizontally until it cuts the $X Y$. Thus all lines lying in horizontal planes



vanish somewhere in the *horizontal line*, which is itself thus the *vanishing line* of all horizontal planes.

Returning now to the consideration of the same rectangular block as is worked out in Fig. 3, it is shown worked again, and more rapidly, by the use of the $V.P.s$ in Fig. 7. It will be seen that, on plan, lines have been drawn from A parallel to DB and DF , cutting the XY and $V.P._1$ and $V.P._2$. Lines have then been drawn vertically down from $V.P._1$ and $V.P._2$ thus ascertained on plan until they have cut the horizontal line on the perspective, at points $V.P._3$ and $V.P._4$ respectively. The height DdD_3 having then been laid down to scale in the same way as was done in

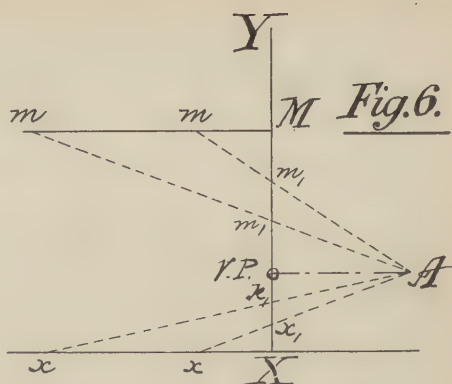
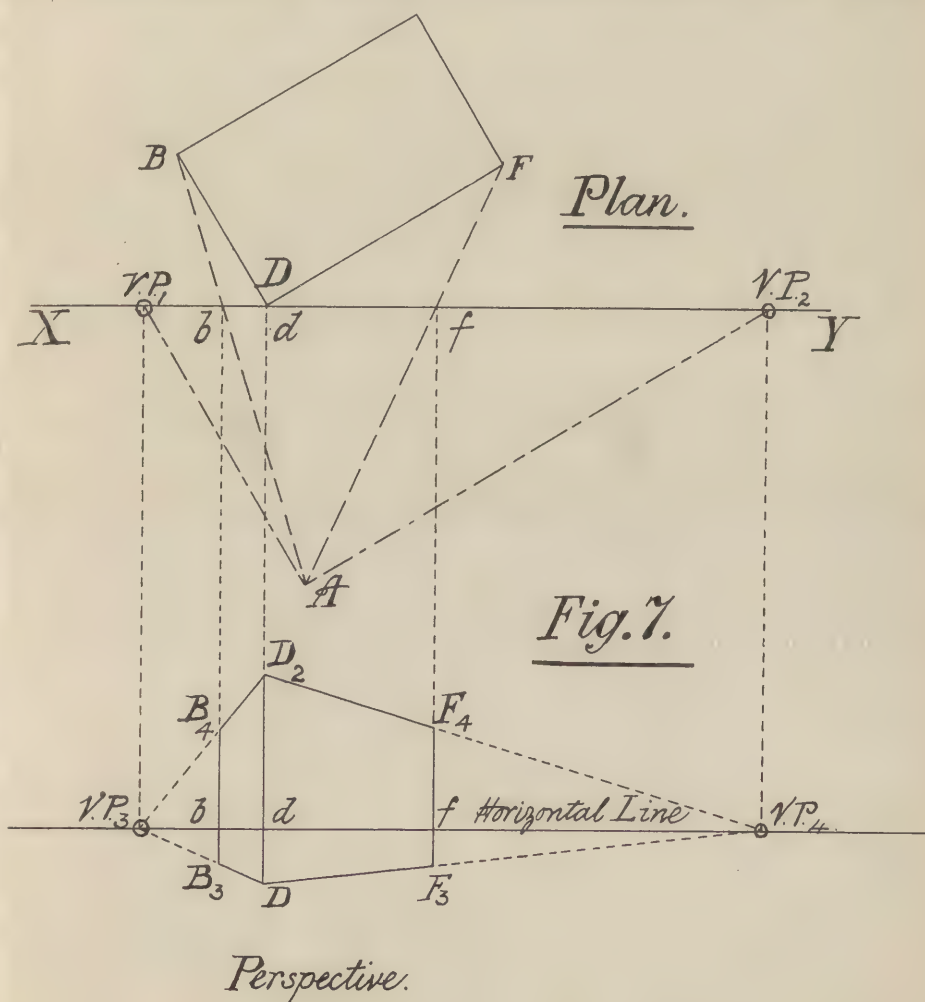


Fig. 3 (these, owing to the picture plane touching the angle $\angle D$ of the building,



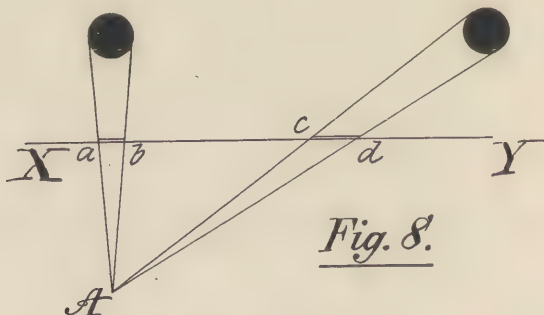
being the same as the heights shown on elevation), lines are drawn from D and D₂ to V P₂, cutting the vertical line projected downward from *b* in B₂ and B₄, and other lines are drawn from D and D₂ to V P₄, cutting the vertical line projected downward from *f* in F₂ and F₄.

The perspective representation is now seen to have been obtained, and to correspond in all respects with that shown in Fig. 3.

From what has already been said, it will be readily comprehended that lines lying in planes parallel to the picture plane (*i. e.*, in vertical planes, save in the rare instances when inclined planes are used as picture planes) have no vanishing points; and this necessarily includes all vertical lines. The perspective representations of such lines must be obtained by direct projection, as in Fig. 3, and they will be found, in perspective, to be parallel to their elevations upon the picture plane, only reduced or enlarged in size according as the picture plane has been assumed in front of or behind them, it being quite a common practice, when it is desired to obtain a large perspective from small-scale plans, to project onto a picture plane behind instead of in front of the object.

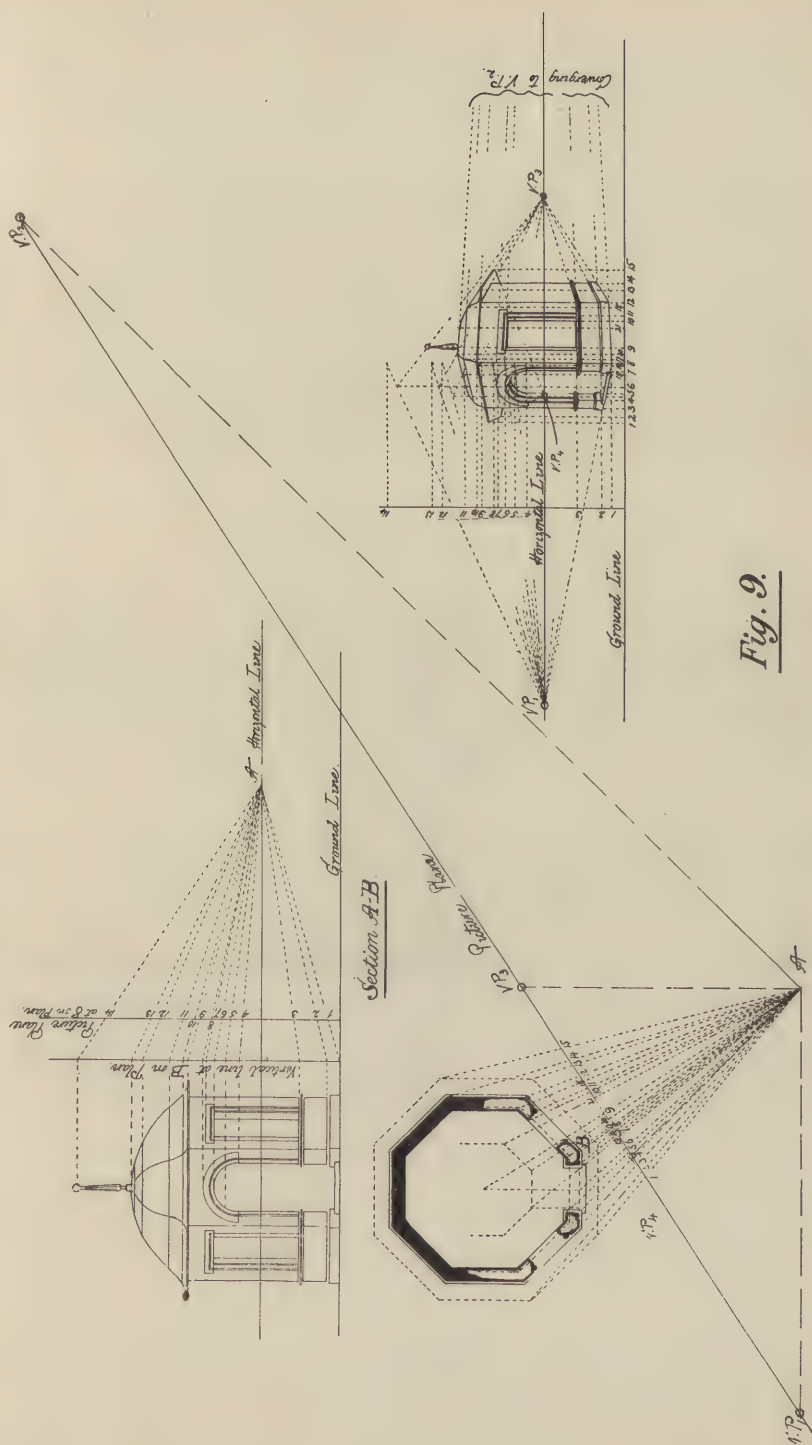
are shown of a series which lie in range, parallel to the X Y. When projected the representation *a b* of the near column P is much less than the representation *c d* of the far column Q. To show them thus upon a drawing would call down criticism of a none too flattering kind—it is only one example of many which could be cited to show that projection upon a plane surface is only a convenience and not correct pictorially; sufficiently near to the truth for all practical purposes, and to be adhered to with circumspection.

In Fig. 9 is shown the method of obtaining a perspective representation of a summer-house, according to the rules laid down with reference to Figs. 3 and 7; numbers having been used to indicate the various points. It will be seen that, the point of sight A, and the picture plane, and the horizontal line, having been determined to suit the view which it is intended to obtain (the horizontal line being 5 feet or about the height of a man's eye above the ground line), the plan is then projected on to the picture plane by lines converging to A, the points thus obtained transferred by measurement to the perspective. The heights are all then ascertained, by one section, at the point marked 8 on the plan, and are carried



It is necessary here to give a word of warning against the too great use of parallel perspective, as it is called when whole plane surfaces of a building lie parallel to the picture plane. The effect is rarely pleasing, and often actually distortionate, as in the well-known case illustrated in Fig. 8, in which two circular columns, P and Q,

thence, on the perspective, from point to point until they reach their final position by using the V. P.'s to right and left which pertain to the main faces of the building. Most workers drive strong pins into their boards at A and at the V. P.'s to enable the lines converging to these points to be more readily drawn with a straight edge. An example with

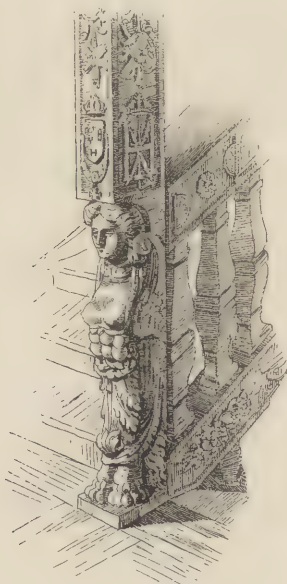


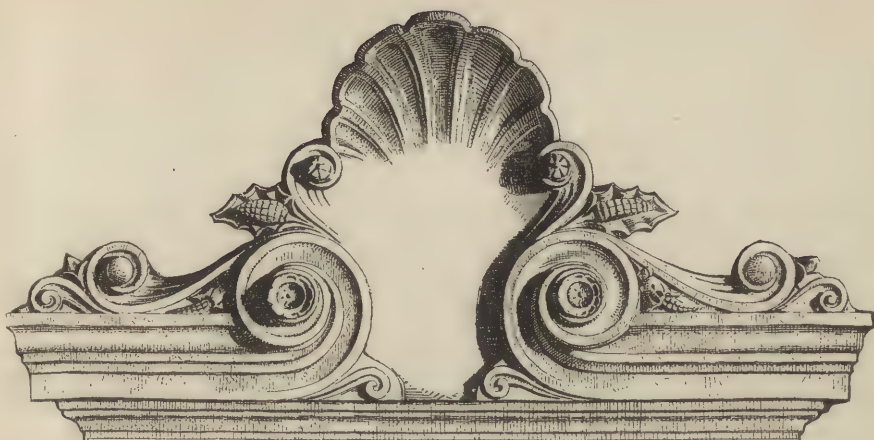
a curved roof has purposely been chosen, to show that points in curves are treated precisely as any other points, the main planes being utilized, or, in cases of great complexity, direct projection possibly resorted to (though this is rare). These points being ultimately joined by freehand in the perspective to obtain the representation of the curves.

Only the main points and lines, it will be seen, have been thus laid down. A beginner, or a very exact and conscientious man, may take the trouble to ascertain everything precisely in this way; but most draughtsmen take the outline thus obtained, rub out the construction lines entirely and almost

the outline also, and finish in ink and color, using this outline as a guide to prevent their going wrong, rather than as a series of precise lines which have to be rigidly shown, and filling in any omitted details by sketching. It is, however, a matter of choice and circumstance entirely, whether the eventual drawing shall be free or rigid in feeling. A free and somewhat coarse sketchy treatment would suit a summer-house; but a theatre or a parliament house would probably call for severity and precision, which could be obtained by merely inking in, with care, a carefully and exactly prepared pencil perspective drawing.

G. A. Middleton.





ARCHITECTURAL ABERRATIONS.

No. XIII.—THE CAIRO.



THE national capital contains some very tough examples of the art of architecture. It is in spite of these that it has attained the reputation, which upon the whole perhaps it deserves, of the handsomest of American cities. That reputation it owes first to the providence of Pierre L'Enfant, the French major of engineers, who planned it a hundred and five years ago; secondly, to the "Ring" which swept and garnished it at great expense eighty years later; thirdly, to the architects of the public buildings, from Dr. Thornton, the Philadelphian amateur, to Walter; fourthly, to the owners and architects of the small minority of seemly and respectable private buildings that have been put up since Shepherd and his associates converted the place into habitableness. The bulk of the private building, however, is still bad—much of it outrageously bad. It is really pitiful to note how little effect the seemliness and decorum of the older public buildings have had upon the projectors of shops and dwellings. In order to admire Pennsylvania avenue it is necessary either to fix one's regards exclusively

upon one of the really admirable buildings that stop the vista at either end, or else, with Mr. Swiveller's Marchioness, "to make believe a good deal." There is nothing admirable in the street itself, except the width and the paving. It would be an excellent foreground for noble buildings, even for buildings merely inoffensive and tolerably uniform. But the riparian buildings are not even inoffensive and not even uniform. They recall the "straggling village in a drained swamp" of the first half of the century. They range from three-stories up to five, and they exhibit all the provincialism and all the vulgarity of the worst period of American architecture. They show the mischievous results of individualism, and the advantage of public control when the question is of making a beautiful and stately city. One thinks that an extensive conflagration would be a great cosmetic, but the thought is checked by the reflection that there is nothing to prevent the buildings reared in their stead from being as ugly and depressing as themselves. Public control has produced the beauty of Washington. The right of an American citizen to do as he likes with his own has gone far to destroy its beauty. There is a patent absurdity in taking thought and spending vast sums of

money for the purpose of making a harmonious city and then permitting any promiscuous private person who can get possession of a piece of ground and raise money enough to put a building on it to nullify all your dispositions and vulgarize your town.

There is one refreshing fact, however, to which the straggling and stupid buildings of Pennsylvania avenue bear gratifying witness, and that is that there is plenty of room in Washington. The straggle shows that it is still the City of Magnificent Distances that it used to be, and that five stories, or the altitude that can be reached by the unassisted human leg, is still the limit of loftiness in buildings. Here is a town, the spectator, revolted by the incongruity between the stateliness and uniformity of the public buildings and the mean and heterogeneous private buildings, may have said to himself, and in fact has often said to himself, here is a town that is at least secure from the sky-scraper. He might have said this even a year ago, when he would still have been confident that no vandal would put up an example of the Chicago construction in Washington, because the intelligent vandal would be convinced that where land was so abundant and expansion of area so easy, the sky-scraper would not pay. Alas! he can say so no longer. A vandal has been convinced that the sky-scraper would pay, and, being unrestrained by statute or propriety, has carried this revolting notion into execution. The result is "The Cairo," the present aberration.

"A ten-story building in a ten-acre lot" is necessarily an architectural aberration; and a twelve-story building in a city of magnificent distances is a contradiction in terms. It does not so much matter what kind of a building it is. The owner might have employed an artistic architect, and the architect might have produced as admirable a building as the Dakotah in New York, distinctly the most successful of the lofty apartment houses. The owner would still be a public malefactor, and the architect an accomplice in a public offense, which is not punishable by law only because we are too imperfectly

civilized to punish public offenses of the æsthetic kind. Our ears and noses are the objects of judicial solicitude, but not our eyes. A man may not establish a soap-boiling establishment, or a slaughter-house, or a boiler-shop in a quiet residential quarter, but he may put up a sky-scraper and none can say him nay. We whip the devil around the stump, when a man raises a stench or a clatter, by pretending that it is dangerous to health, which is mostly bosh, both as to the soap-factory and the boiler-shop, but when he constructs an eyesore we can do nothing except relieve our feelings in print, as in the present instance.

But now specifically. Granted, what no reasonable or humane person will ever grant, the propriety or necessity of a sky-scraper in Washington, what kind of sky-scraper is the Cairo. It is the worst kind. There is only one malefactor concerned in the designing of it, for the owner, it seems, is also the architect. That is satisfactory, for one likes to think ill of as few fellow creatures as possible. It would be more satisfactory if there were any evidence that the owner had applied to artistic architects to help him gild his pill, and they had particularly refused to abet him and left him to bear the odium alone. But there is no real reason to think so well of the practitioners of architecture. They are too apt to say with the owner, *il faut manger*, and the answer is equally obvious and familiar in each case. At any rate the pill is ungilded. The building is a box and the combined owner and architect has done nothing to mitigate its boxiness. Indeed, he seems purposely to have aggravated its rectangularity. In the prospectus which, in his quality of spider, he has published as an allurement to the prospective tenant, in the quality of fly—"Will you walk into my sky-scraper"—he says, "The outer brick and stone facings serve merely as a protection from the weather, and do not enter into its structural study whatever." He might have added that they did not enter into its architectural study "whatever," for there is no architectural study whatever. It is a box full of holes. True, the bottom is



THE CAIRO APARTMENT HOUSE.

Washington, D. C.

of stone, which is presumably stronger than brickwork, and therefore is properly used as a substructure when the substructure supports the superstructure, but meaningless when both substructure and superstructure are hung on steel frames. Of course this is the case with the best architectural renderings of the Chicago construction, as well as the worst. The architects play that these envelopes of masonry are real buildings, and they ask the spectators to pretend the same thing. It is, from this point of view, proper that the basement should be massive enough, apparently, to carry what is over it, that the bottom should be the strongest and simplest, and the top the lightest and richest part of the assumed structure, and that the same canons of criticism should be applied as if the assumed structure were the real one. This structure goes to pieces at once under such a scrutiny. True the basement is of masonry, but it is not massive or strong of aspect, being painfully weak and thin. Moreover, it is not set off by any architectural devices as an essential division of the building. It is not even clear where it stops, for in the middle it goes a story higher than in the flanks, and in both places stops without any architectural punctuation, as if the builder had merely run out of stone and had to take to brick at this point. As to the relation of voids and solids there is properly no such relation. The ends and the centre are projected a little, and the windows are varied in form, some being square-headed and some round-headed. But it is plain that these dispositions have had no more artistic origin than the desire to "obtain variety," and variety without purpose is mere confusion. The terminal pavilions are lean and hard, the central projection confused in mass and crude in detail, the fenestration architecturally nothing at all. Making this front various has only accentuated the fact that it is monotonous. "The more it changes, the more it is the same thing," as the lively Gaul observes. It is curious how the effect of boxiness, inherent in the original parallelopiped, is enhanced by all the things the archi-

tect has put on it ostensibly to relieve it of that appearance. The balconies at the angles, at the centre, and between the two, are merely box-like troughs, and so is the cornice a mere projecting box. It almost seems as if the designer must have projected these boxes in a cynical spirit, as if instead of trying to mitigate the boxiness of the building he were intent upon aggravating it and "rubbing it in." Upon the whole we decidedly prefer the side, where he has not pretended to do any architecture, to the front, where he has made his unsuccessful pretensions in that direction. The side is an ugly object, a very ugly object, but it makes no pretensions, and thus escapes vulgarity. It is the pretension of being an architectural work that makes the front so exasperating, when it is as evidently as the side, a box, *box et praterea nihil*. There may be as bad buildings elsewhere as the Cairo, we freely admit, and bad for the same reasons and in the same way. The owner and architect may inquire why we single out his bad twelve-story box for animadversion, and let the other bad twelve-story boxes go? It is because other bad twelve-story boxes have an excuse for their existence, if not for their badness, which his box lacks. "A twelve-story building in a twelve-acre lot," is an absurdity as well as an outrage, and a twelve-story apartment house in Washington is gratuitous and inexcusable, and denotes a deeper dye of depravity than it would in a more crowded city, where land is not to be had. Moreover, such a building in Washington is an indictment not only of its projector, or of the community, but of American civilization. The aspect of the national capital is a matter of concern not only to its own inhabitants, but to all American citizens. We understand that since this sky-scraper has been reared to this bad eminence, the authorities of the district have taken steps to prevent the rearing of any more like it. But the shameful fact remains that there has been no way found of preventing the erection of the Cairo in the capital of the United States.

THE ALPHABET OF ARCHITECTURE.*

THE DATA OF EGYPTIAN ARCHITECTURE.

IN the two preceding chapters we have considered briefly the nature of Architecture and some of the more important of the factors or influences which have worked to produce the many historical phases which the art presents to us to-day. We have seen that the development of Architecture, from its simplest beginnings to its most complex condition, has been rather a continuous process than a series of independent and unrelated efforts; and we have sketched for ourselves a rough outline map of this development, which shows us that if we set out from the present day, purposing to travel backward along the great architectural highway, we pass successively through the temporal region of the Renaissance, dotted with the palaces of kings, and the chateaux of nobles; through Mediæval Europe, with its picturesque Gothic profile—its cathedral spires and castle turrets,—through ancient Rome, splendid with richly-wrought colonnades and grandiose triumphal arches; through Greece, with its serene temples and noble statuary. Beyond, should we press further into the past, we attain the outermost limit of the historical road, in Egypt, at a period between three and four thousand years before Christ.

It is our business at this moment to make this long backward journey; for, prompted by the knowledge that Architecture has never broken with the past, we are, of course, particularly anxious to begin our survey of the art as remotely as possible.

The oldest known buildings in the world stand in the Nile valley,

“In all the imploring beauty of decay.”

Every age, we may say, has recorded its astonishment at the larger of the many pyramids which stand at the verge of the desert, near to the modern city of Cairo, and its admiration of the vast, many-columned temples at Karnak, “shadowy with solemn thoughts.”

But though the world has been acquainted with these monuments for so long—they loom up in the background of human history like remnants of the primal world—it is only recently, comparatively speaking, that the measure of their antiquity has been taken with anything like scientific precision, and still more recently it is that the architectural student has awakened to an active, penetrating interest in them. Until a few years ago, the tombs and temples of the Nile valley were regarded as representing an isolated phase of art, out of

* Preceding chapters in Vol. III., Nos. 1 and 2.

touch of, or, at the closest, only very distantly connected with, the historical development of Architecture. Better knowledge of Egyptian architecture and its relations is rapidly changing this false notion.

It must be remembered, however, that ancient Egypt is really a modern discovery. Within the last century there has been dug up in the Nile valley an immense tract of time that had been almost lost, and in many particulars quite lost, to the memory of man. Archæologists and others have succeeded in restoring to view the civilization of this forgotten period with very much of its original color and movement. They have peopled the old land with its ancient inhabitants and revealed them to us busy in their daily routine. This restoration is one of the most brilliant achievements of modern curiosity and modern methods. A literature, utterly dumb for centuries, has been made vocal again. The dead have been resurrected, and interrogated, and have repaid this unceremonious treatment with strange tales of their affairs. They have testified to so much that had been obliterated from human knowledge that we, to-day, have become almost contemporaries of that remote, many-colored world of theirs, to which they closed their eyes at a time when European history was far from its commencement. We see more of Egyptian life than Herodotus could have seen when he traveled along the Nile in the fifth century before Christ. Of the history of the country we know more than was known to the best informed of the priests he talked with. Within recent years we have uncovered buildings and entered chambers, and trodden floors of which the Ptolemies were ignorant.

Two keys opened all this knowledge to us. One, the decipherment of the hieroglyphics—the sacred or priestly form of writing of the ancient Egyptians; the other, the spade, which has unearthed from the soil, wherein they were buried for centuries, portions of lost cities and forgotten temples and hidden tombs, in addition to thousands of articles of daily life. A few words about these matters are necessary.

The Egyptians used three different kinds of writing: the hieroglyphic—the writing on the monuments; the hieratic—a speedier, cursive form of hieroglyphic; and the demotic or common script, used first in the ninth century B. C., in social and commercial intercourse. The queer-looking signs that appear to be partly pictorial, partly symbolic or conventional (of which the following are examples), which we find carved or painted on nearly everything Egyptian—on obelisks, on the front and interior walls of buildings, on the surface of coffins, etc.—are hieroglyphics. The truth is the old Egyptian was a great scribbler, and apparently every blank space tempted him grievously to grave or paint something upon it. For history's sake this was a very happy and fortunate practice. It gave to a great number of usually fleeting

facts the perpetuity of stone. So it happened that long after Egyptian civilization had passed away, modern travelers in the Nile country found themselves confronted by some fragments of this dead script, everywhere there remained a vestige of the ancient glory of the land. The writing, indeed, had long ceased to be legible. Even in the books penned by the old Greeks who had traveled in Egypt or

met	her	xeper	en	meh - f	mesesbeb	em
<i>To be said over a scarab of green jasper bound round with</i>						
smu		ant - f		em	het'	ertau
smu metal,		ring its [being] of		silver,	to be placed	on
xu	er	xeχ - f	qementu	re	pen	em
<i>a blessed one^s over throat his. Was found chapter this in</i>						
xemennu	xer	ret	en	hen	en neter pen	-s
<i>Hermopolis under the feet of the majesty of god this, { [inscribed] was } it }</i>						
her	tebt	en	bât	qemâu	em	nâ
upon a slab	of	steel of the south	with the writing	of the god		

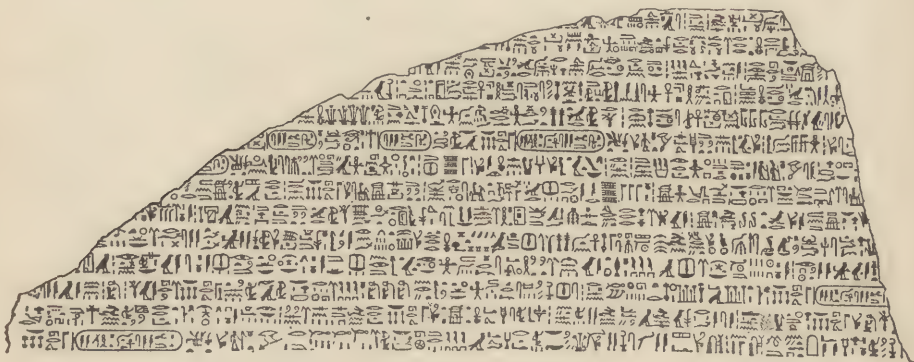
HIEROGLYPHICS (WITH TRANSLATION).

written about its people, there was scarcely a hint to be found of the true principle upon which these signs were put together, or of their value as vocables.

Naturally, these mysterious hieroglyphics tempted the ingenuity and curiosity of the learned. Many attempts were made unsuccessfully to decipher them, because conducted upon false and delusive theories. It was not until the beginning of the present century that the right path was definitely entered upon by Dr. Thomas Young (who, by the way, was the discoverer of the undulatory theory of light) and Jean

François Champollion. To these names should be added that of Akerblad, a pioneer, the value of whose labors was quite important. It was Young who made the first firm step forward. He determined the real character of the hieroglyphics, made them speak, utter, after so long a silence, a few indubitable sounds; but to Champollion belongs the greater credit of having rendered them fluent, by perfecting, with rare ingenuity, the new discovery, so that it became a complete instrument for the decipherment of the old language.

Briefly, the riddle was solved in the following manner: In 1799 a slab of black basalt, inscribed with fourteen lines of hieroglyphics, thirty-two lines of demotic and fifty-four lines of Greek text, was discovered by a French military officer named Boussard near the Rosetta



THE HIEROGLYPHIC PORTION OF THE ROSETTA STONE.

mouth of the Nile. This is the famous Rosetta stone, the finding of which greatly quickened the activity of hieroglyphic students the world over and led to the solution of the old puzzle. The inscription upon its face is a decree of the priests in honor of Ptolemy V., Epiphanes, a King who ruled over Egypt B. C. 195. This much was surmised from the lines written in Greek. Now, it was guessed that hiero-



Aäh-mes-se-pa-âri.

A CARTOUCHE.

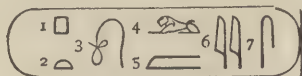
glyphics were letters of phonetic import, like our alphabet, and that the groups of signs surrounded by an oval (technically termed a cartouche), found so frequently on the old Egyptian monuments, were royal names;

the circle around them being intended as a distinguishing mark of honor. On the Rosetta stone there was only one royal name, presumably that of the King, Ptolemy—supposing, of course, that the accompanying Greek writing on the slab was of the same purport as the hieroglyphics. The Rosetta stone, whispering as it did the meaning of the hieroglyphics in a language well understood, was the immediate inspiration to the labors of Young and Champollion.

The material it offered, however, was not in itself sufficient for scholars to work with. In order to obtain complete mastery of the old writing an additional discovery was necessary.

It happened that in London at the time there was an obelisk recently brought to that city. Upon it there was not only a royal name, the signs for which were precisely similar to those within the cartouche on the Rosetta stone, but also a second royal name; and the Greek inscription found upon the base in Egypt, from which the obelisk had been taken, indicated that the hieroglyphics represented a petition addressed not only to Ptolemy, but also to Cleopatra his sister and Cleopatra his wife. The names were written thus:

NO. 1, PTOLEMY.



NO. 2, CLEOPATRA.



Champollion argued: Clearly if the surmise about the identity of the royal names be accurate, and if hieroglyphics, as supposed, represent letters, the signs for the T, the O, the L and the E in the word *Ptolemy* on the Rosetta stone and on the obelisk would not only be repeated in the second royal name, *Cleopatra*, on the obelisk, but would occupy therein certain definite positions; for these letters occur in Ptolemy and Cleopatra. This guess was the flash of light by which the first glimpse of all great discoveries is caught. Analysis proved that the theory and the facts harmonized. Working in this manner with other royal names Champollion established the value of one hundred and eleven signs. All this, of course, was only a first step; but it opened the road for others. The secret of the hieroglyphics was no longer a riddle.

Egyptian monuments and remains then began to speak to us about

their history. And how much they had to say, these garrulous monuments, about forgotten Kings and old beliefs and a civilization so ancient that it is not quite easy now to bring it within our perspective of antiquity ; for Egypt is a land covered with inscriptions. But abundant as the information is which the hieroglyphics yield, our knowledge of Egyptian history and Egyptian life would still be very fragmentary and incomplete were it not for the enormous historical quarry uncovered by the spade. Literally, the story of the old Pharaohs and their people has been excavated age after age very much as the geologist has laid bare the record of the rocks. Egypt in great part, let it be remembered, is a land of sand. The climate is extraordinarily dry. Rain is a rare phenomenon, so that everything confided to the soil is preserved beyond memory in rare integrity. The faith of the people, too, was such that they not only buried their dead with elaborate precaution to secure the perpetual preservation of the body, but they provided the corpse with many of the articles of daily life. They surrounded the mummy with paintings of scenes and images of objects familiar to the deceased. Thus it happened that a very considerable part and an unusually full representation of each generation of Egyptian civilization passed, we may say, underground. The ever-moving caravan of the dead, which travels elsewhere so scantily furnished, set out in the Nile valley heavily laden with mortuary furniture and trappings. The Egyptian necropolis, indeed, was a well-furnished city. And so densely peopled ! Three hundred years ago mummy was a common drug in apothecaries' shops, medicinally of good repute for the treatment of bruises and sores ! In our own day it has been used for manure ! It has been computed that perhaps more than 700,000,000 bodies were buried during the ancient dynasties.

But the Egyptian was not the only interrer who confided fragments of the old life to the keeping of the soil. Time and the vicissitudes of human affairs were also busy providing material for the modern explorer with his spade and pick.

The traveler as he progresses along the Nile cannot but remark the number of mounds that dot the country like hillocks. His imagination of how busy and teeming a land old Egypt was is immensely stimulated when he learns that each of these mounds marks the site, is the tumulus of an ancient town or village, nay, frequently of a series of towns or villages superimposed one above the other, like strata. The manner in which these elevations were created will make clear how great is their value to the archæologist and the historian. Let us speak generally. The habitations of the townsfolk of an Egyptian city were constructed not of stone, as the great architectural remains of temple and pyramid might suggest, but of very perishable material—of timber,

or, in greater part, of wattle and daub, or of crude brick made of lightly pressed Nile mud. These are the handiest building materials which the country affords. They are immediately available everywhere. Very serviceable, too, is this mud in a land where rain is practically unknown and where at times the annual Nile inundation works destruction by transgressing the ordinary limits—with it, it was so easy to rebuild whatever had been swept away. If we picture to ourselves now a considerable Egyptian town, we see the centre of it is usually the sanctuary of one of the gods. Around the temple are grouped the houses of the people. The sacred edifice, of course, is built of stone, and in the natural way of things outlasts the meaner domiciles it overshadows. In the periodic rebuilding of the city, the easiest and natural course is merely to raze to the ground the old structures and erect the new edifice upon the debris, as upon a foundation. Thus, as time progresses the tendency is for the level of our city to be elevated, until perhaps the temple stands in a hollow, as in an amphitheatre. Then may be our town reached its heyday. It languishes. Its buildings fall into decay. The material of which they are constructed is resolved in part into its original state. The pious become few. The temple is no longer maintained in repair. Worship in it ceases. Greek and Roman rule come and dominate the land, for Egypt felt the foot of the alien conqueror many times. The ancient faith expires. New generations which know not Ra nor Osiris nor any of the ancient gods build their habitations within the temple inclosure, perhaps for convenience sake against the very walls of the building, much of the stone of which is carried away as from a quarry for other edifices. The mound of earth encroaches upon the temple, surrounds it, invades it, perchance buries it, until finally, with the waning fortunes of the country, the last inhabitants of the place pass away and the site is permanently deserted. Centuries later, the modern excavator arrives in search of old buildings and of buried remains belonging to the former dwellers there. Accident and disaster have deposited much for him in the soil.

In some such fashion as the foregoing the mounds were created. These mounds and the many buildings which have stood in Egypt, in visible grandeur, slowly decaying for ages while the world has been moving so briskly elsewhere, are the great repositories of the knowledge we possess of the Pharaohs and their people.

But, it may be asked, why say so much about these matters? What have national beliefs and popular practices, and all such historical talk, to do with architecture? Let us clear this up. It is important to do so.

To thoroughly understand the architecture of a nation it is essential to know a great many things about the people who produced it

and about the land in which it is found. Scarcely any fact from any direction comes amiss in the work of interpretation. A nation's habitations are concrete expressions of a multitude of circumstances and influences. We have touched upon this matter already in a previous chapter, but to repeat will only be to reinforce facts which must not be forgotten. We have said climate plays a part in the shaping of buildings, and the architect's hand is moved and his activity directed by the nature of the material resources at his command, by the condition of the society in which he lives—its habitudes and requirements—by national antecedents, by international intercourse, by tradition—meaning by it that wider connection of an historical nature which unites the present in general with the past in general, and associates a community in a manner often so indirect and roundabout with the travails of the entire human race.

For example, let us glance at the early period of architecture in the United States. The first colonists in New England and Virginia, forced by the call of immediate necessities, made use at once of the abundance of timber at hand, and constructed their primitive habitations of logs or hewn lumber. We may say the selection, under the circumstances, was inevitable. Nothing else was practically possible until the colonies had become somewhat more populous and wealthy. And growth and development *did* speedily affect building. The log-house was replaced by the dwelling of sawn lumber, and the rude meeting-house by the brick church. And, now, mark, as soon as building became architectural—something more than rough provision for shelter—national antecedents began to play their parts. The settler in New England, New Netherland, New Sweden, turned for precept and example to his mother country, and adopted in his new home the style prevailing at the moment in the old home. In these particular cases the established mode in the old countries was the Renaissance; and, as the influence of the English became paramount in the colonies, it was the English phase of the Renaissance, the Renaissance of Queen Anne and the Georges that was reproduced everywhere along the Atlantic coast from the Canadian boundary to the limit of Spanish influence in the South. But the reproduction was a reproduction with differences. Masons were few in the new country, and bricks, at any rate for a time, too expensive for common use. Wood was the natural building material. It was obtainable everywhere. The carpenter was the master-builder, and inevitably in translating the architectural forms he borrowed from brick and stone into timber, he modified his copies in accordance with the natural character of the material he worked with. Slenderer dimensions, finer details, greater elaboration were possible in wood than in masonry; and these we know are the very characteristics

which distinguished the "Old Colonial" style, as the first phase of American architecture is called, from the style it was patterned after. Indeed, the "Old Colonial" style has been aptly defined as the carpenter's interpretation of the Renaissance. Moreover, the new buildings were step by step adapted not only to the particular requirements of the colonists, but to the different climatic conditions of the country. The obvious addition of the verandah, unnecessary in England, but demanded by comfort in the warmer American summers, need not be pointed out. Any one, too, who compares the New England dwelling of colonial days with the Virginian home of that time, will perceive at once evidence of the strongly marked social differences which distinguished the Puritan community of the North from the Southern aristocracy of slave-owners. It is not necessary to push the example further. Enough has been said to illustrate what is meant by the statement that a nation's habitations are concrete expressions of a multitude of circumstances and influences, and that the work of the architect is directed by such matters as climate, material resources, the condition and requirements of society, by national antecedents, international intercourse, and the like.

Every phase of architecture, thus, can be to some extent accounted for, and to understand thoroughly we must know a great many things that at first sight seem to be utterly foreign to architecture. However, it musn't be thought that when we have enumerated all matters like the foregoing we have before us every element of architecture. There is still to be taken into consideration not only that subtler and complex force, the personal genius of the architect, but also the native genius of his people in which he is a sharer, that spirituality or temper of mind which is obvious enough in its stronger manifestations, as, for instance, when we compare the work of the Asiatic with the work of the European, the work of the German with the work of the Frenchman. Each is marked by a clearly recognizable style, or character or "look." Architecture is the artistic characterization of certain necessities and conditions, but in the artistic expression imparted there is an element that baffles cold analysis:

"One thought, one grace, one wonder at the least,
Which into words no virtue can digest."

Turning to Egyptian architecture with this in mind we become curious at the outset to know what sort of a country ancient Egypt was, and what kind of people lived in it. Was it a land of great extent, of rich fertility? Was it liberally endowed by nature? Was it arable, pastoral or mountainous? Was it an inland country? What was the



MAP OF ANCIENT EGYPT.

From Erman's "Life in Ancient Egypt."

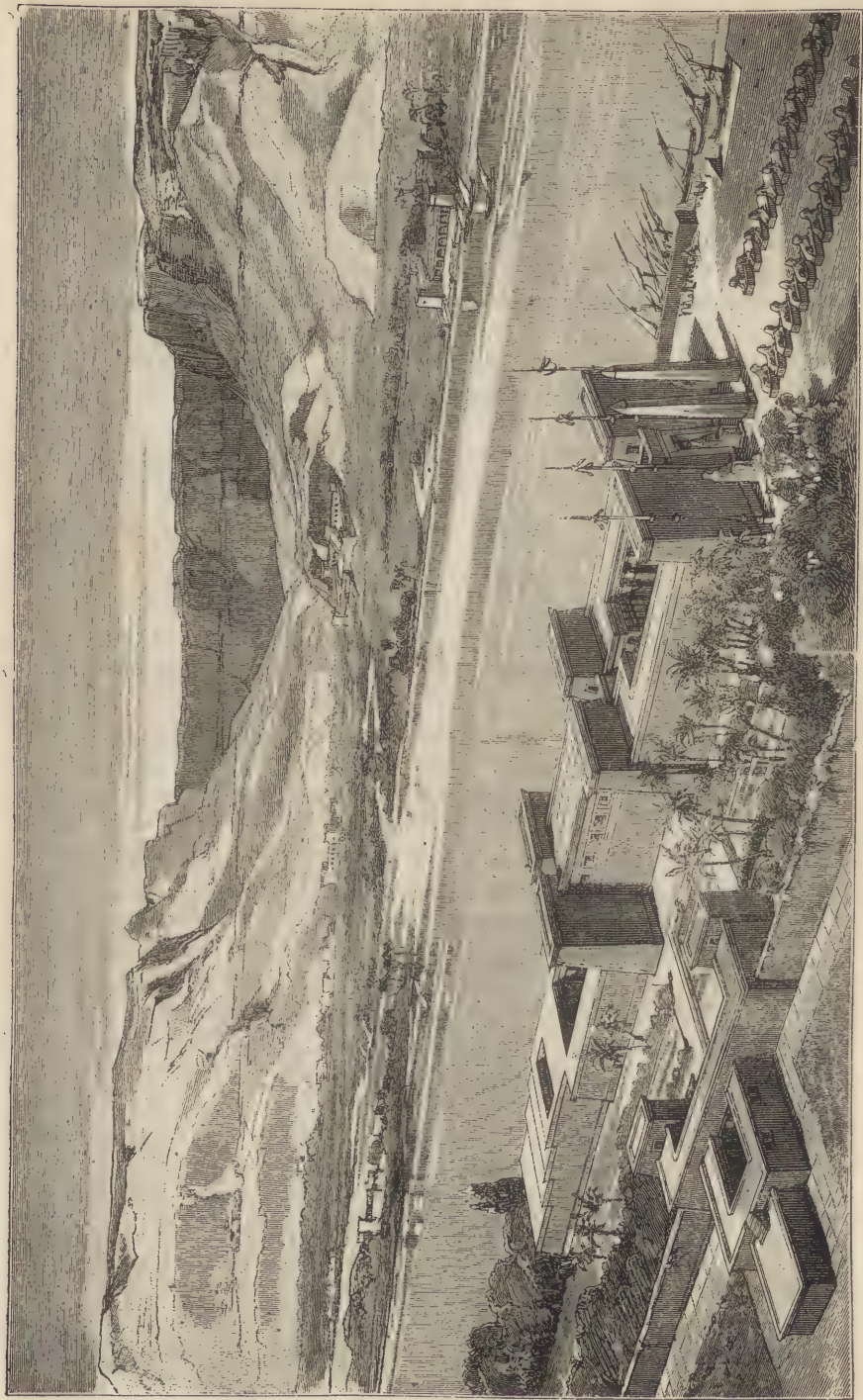
social state of its inhabitants, the nature of their faith and ideals? What were their international associations? What was the course of their history? We are sure, now, that the matters touched by these questions "got into" their architecture, in some degree at least.

To speak first of size. Contrary to the general notion Egypt is a very small country. True, it has great extent. It is "nearly all length," as the saying is. But if we measure the area of its cultivable soil we find it amounts to less than that of any country of Europe, excepting Belgium and Servia. Limited thus, it comprises some 12,000 square miles. Holland is larger by about 1,000 square miles, and Denmark exceeds it by about 3,000 square miles. To take our comparisons nearer home, the land which the Pharaohs ruled over,* the seat of one of the greatest and most splendidly-colored civilizations that mankind has seen is only one-half as large again as Massachusetts.

It might be thought that so contracted a field should restrain our expectations as to the grandeur and richness of Egyptian architecture and the importance of that architecture in the history of the art. Undoubtedly, but for special circumstances the marvelous concentration of human activity within a very restricted area which occurred in Egypt would have been impossible. This particularity was the great fertility of the soil and, again, this remarkable productiveness was itself the result of the extraordinary behavior of the River Nile. Not only is the land of Egypt most easily entered and perambulated by following the Nile stream, but it may be said the history of the country likewise is traversed by the Father of Rivers. To see the one, to understand the other, the same journey is necessary.

The form of Egypt may be likened to a lotus bud attached to a long stalk. The bud is the district known as the Delta—a wide, flat alluvial plain stretching in fan-shape along the Mediterranean and narrowing to a point inland not far distant from the modern city of Cairo. Here, about one hundred miles from the sea, begins the stalk. This stalk division of the country is styled Upper Egypt in contradistinction to Lower Egypt—the Delta lands. Its physical features differ extremely from those of the Delta. Essentially, it is merely a long cañon, only a few miles in width, traversed from end to end by the Nile. Passing up the river the traveler sees on one hand and on the other at a distance varying from a few yards to fifteen miles a rocky wall of hills bounding the valley. At places these grey stony palisades (they are not unlike the Palisades on the Hudson) creep up almost to the river's edge. Elsewhere they recede, and the cultivable soil, the fertile fringe bordering the banks of the stream, contracts or expands in com-

* We omit from consideration the sphere of Egyptian influence in Asia, which was a variable and uncertain quantity.



VIEW OF THE NILE AT THEBES.

(Temple in foreground restored.)

pany with them. This green strip is the only land of a productive nature in all Upper Egypt. At the base of the hills there is sand and beyond the hills there is sand—westward, the Sahara, the type of desolation, eastward the Arabian desert, a scarcely less solitary wilderness penetrated by a few gorges which support a scanty vegetation, and have served from the earliest days as highways between Egypt and the shores of the Red Sea. The length of this green stalk, measuring southward to the first cataract below Syene is about 600 miles. The Delta is over 100 miles from apex to periphery, and the greatest width, along the Mediterranean, about 160 miles. This is Egypt, not political nor geographical Egypt, it is true ; but Egypt of industrial life. If at first the statement that the land of the Pharaohs was in effective extent but a



THE BANKS OF THE NILE.

third-rate territory, contradicts one's general impression, it is clear now why the cultivable area of the country was so scanty. The dead parched land of the desert, the region of sand, was a barren addition to the national geography.

But, even the narrow fertility which we have just defined would not exist save for the peculiar behavior of the Nile. Ever since Herodotus penned the phrase the world has been re-echoing it : "Egypt is the gift of the River." The phrase is not only a happy one but it is strictly true. Euripides in one of his tragedies makes Helen say, "The river that waters Egypt is fed by pure melting snow instead of by rain from Heaven." The poet is not quite correct but nearly so. The Nile, our geographies tell us, rises in the Central African lakes, but the greater part of its stream is obtained from the tropical rains which fall upon



EGYPTIAN SCENERY.



EGYPTIAN SCENERY.



EGYPTIAN SCENERY.

the mountains of Abyssinia in the spring—as well as from the “pure melting snows” which Euripides speaks of. The Blue Nile receives the swollen torrent—there is another equatorial affluent, the White Nile—from the mountains, and this flood traveling southward early in the year is the source of the river’s greatness.

Naturally, the Father of Rivers is lank and shrunken. Immediately before the inundation the Nile is a meagre stream, panting under a burning sun. It drains sluggishly between high mud banks, through a country which lies baked and dusty. Scarcely half the bed of the river is covered then. It is early in June when the coming of the new flood is heralded at the southern entrance of Egypt. As it has a long distance to travel, it is not until about the middle of the month the water begins to rise at Cairo. A few days later the first effects of the inundation are noticeable in the Delta. In the beginning, the river expands slowly. Imperceptibly does it overflow the limits of its narrowest channel and creep outward towards the flood banks. Nearly a month elapses before the tide is at its height, but at its height the river has become a majestic stream and its deep waters are heavily charged with a muddy deposit which serves to fertilize the Egyptian harvest fields.

It is ordinarily supposed that the inundation is a haphazard and,



VIEW OF THE BANKS OF THE NILE.

in a sense, catastrophic event, not very unlike the spring floods that occur in our turbulent rivers in the United States—the Mississippi, for instance. It is essential to remember that this is not the case. The overflow of the Nile is a regular and regulated occurrence. From the very earliest day it has been controlled and directed by an elaborate system of dykes, canals and sluices. The memory of man runneth not to the contrary. Legend attributes the foundation of the system to the god Osiris. It was worthy of divine origin, the old Egyptians thought. Menes, the first of the Pharaohs, was gratefully remembered by them



VIEW OF THE BANKS OF THE NILE.

as the builder of a dyke which conferred much benefit upon the Delta and Middle Egypt.

We have already said the marvelous fertility of Egypt, and in consequence the populousness of Egypt, were created by the Nile, so we must now add government likewise, in Egypt, must have arisen in the beginning, or at least must have taken form, in no small measure, under the pressing necessity for having the annual inundation in the hands of authority, local perhaps at first, transferred later to a central government. We know that in the earliest historical period public disorder arose and many heads were broken in personal and sectional



VIEW OF THE NILE DURING THE INUNDATION.

bickering about irrigation. Irrigation everywhere tends to become a governmental affair. It creates authority and officialism. Wherever it exists it begets crossing interests. This is particularly the case in Egypt for there when the Nile is at its height the lands contiguous to the river are not inundated by the waters bursting over the banks. Uncontrolled, that is what would happen; but then the fertilized area would be very much less than it is when the water is conducted through arteries and expanded by small piecemeal overflows, brought about by dykes. At "high Nile," usually about the middle of July, it is decided to open the dykes that confine the river to its course. Then the water flows into the transverse channels and these, at certain places being dammed spread the water abroad.

In this manner, step by step, the country is inundated until at last it takes on the appearance of a vast lake, dotted with islets and crossed by artificial causeways which connect village with village. The inundation is complete (at Cairo) in September. The dykes at the entrances of the canals are then closed in order to retain the water sufficiently on the land, for outside in the main current the flood soon begins to fall and the river to contract.

This regular recurrent rise and fall of the Nile was the pulse of Egyptian life. It regulated and directed the activities of the people, and was for them what the alternation of the seasons has been to others. No wonder the Egyptians deified the river and fixed their New Year's day on the 15th of September, the date when usually the Nile is at its highest.

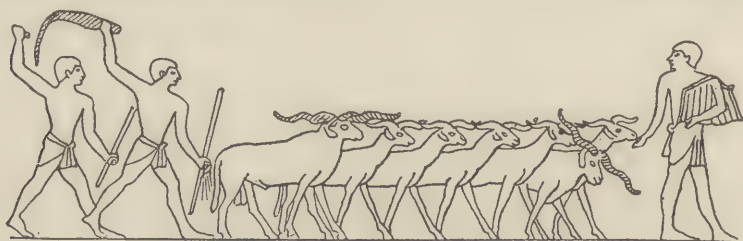
The inundation divided the twelve months into three equal parts for the agriculturist. (1) The period of inundation, from June to the end of October; (2) the period of growing crops, from the end of October to the end of February, and (3) the period of harvest from the end of February to June. And agriculture, let us remember, was the chief pursuit of the people. The prosperity of the land depended upon it. Nature's largess did not take any form other than the remarkable fertility of the soil. There were no rich mines in the country, no wealth of timber, no abundant and diversified flora and fauna. The only common forest trees of the land were the sycamore (which the people worshiped) and the acacia. Neither is of much importance in the mechanical arts. The latter is serviceable enough for furniture, doors, and constructions of that nature, but the supply of it was always very limited, even in early times. Indeed, it became almost extinct within the limits of Egypt proper at a remote day, and pine wood was imported from Syria and acacia from Nubia to take its place. As to the sycamore, it furnishes very inferior timber, being knotty and yellow, and laborious to utilize. The only other important trees in the country were the Date palm and the Dôm palm, and these, too, were poor material for the carpenter. So, from our picture of Egypt in historical times, we must banish all forest landscapes and well-wooded stretches. Rather, we must think of the country as a long, narrow, flat, "bottom land," hemmed in, as we have indicated, by two walls of stone, every square foot of soil possible being devoted to the cultivation of industrial crops.

Annually, as soon as the waters of the inundation had subsided, the tillers went out into the fields to turn up the earth freshly fertilized with the silt which the river had deposited. The ploughman guides the primitive share and the ox-driver goads his beasts. Then follows the hoeing to break the heavy clods and prepare the earth for the seed which is trodden into the damp mould by flocks of sheep, which are noisily driven



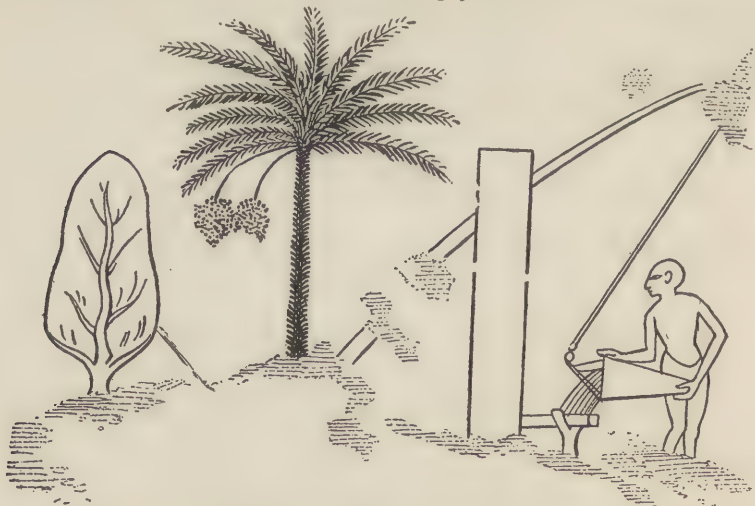
Ploughing. (From an ancient drawing.)

about the freshly-sown field. The chief crops raised are wheat and barley and black millet or durra. Onions, cucumbers, and melons are plentiful. In short, wherever we turn our gaze, all the arable land is under the subjection of the plough. There are no waste places, or unpeopled wilds, no "remote" spots, no forests, no meadows colored



Treading in the seed. (From an ancient drawing.)

with wild flowers throughout all the Nile valley within touch of the river's flow or the more laborious reach of irrigation with the slavish shaduf. And, where vegetation ceases on the eastern and western limits the barrenness of the desert sand is sharply defined.



The Shaduf. (From an ancient drawing.)

It may be imagined that because of the special and peculiar provision which Nature had made for the fertilization of the soil, agriculture in Egypt was a less laborious and unending toil than it is elsewhere. The fact is that perhaps the farmer has nowhere been so hardly tasked as in the Nile valley ; for besides the ordinary work of seed time and harvest time there was the added necessity of perpetual labor to build, repair and operate the network of canals, sluices, dykes and dams required for artificial irrigation. Moreover, a portion of the soil maintained under cultivation did not receive sufficient moisture from the river's overflow, and beyond the furthest limit of the inundation there was land which had been annexed to the fertile belt by tiresome mechanical irrigation. Both of these divisions demanded incessant labor during the growing of crops. Nature, to sum up, gave abundantly in Egypt, but not with tropical ease and generosity.

As to the fauna of the country it was not quite as limited as the flora. For the latitude, however, it was decidedly poor. The tombs of Egypt are covered with representations of animals. It is computed that in thirty-one years half a million head of cattle were devoted to the temples alone. And, the wealth which these figures indicate was produced chiefly by close domestication. The extreme cultivation and settlement of the land in Upper Egypt naturally operated to preclude roving herds. Even the maintenance of cattle within the narrow limits of the fertile valley was a difficult matter and we find, therefore, that the herds were kept in the north, in the marshy land of the Delta. The natural pasture of the country was there and the herdsmen who tended the stock in these northern plains lived with their animals in reed huts and were regarded almost as pariahs.

Let us conclude this brief sketch of agricultural life in Egypt with the summary of a recent writer upon the subject. "Everything," he says, "tends to show that the Egyptians themselves felt that agriculture, together with cattle-breeding, was the most important industry of the country. Nevertheless, the prestige of this idea had no influence upon the position of the agricultural laborer who was always looked down upon as a hard-worked creature." The important fact for us is that, despite paradoxical results, societies are in great degree shaped by the condition of the fundamental class of the people ; and by and by we shall find much in Egyptian life and, therefore, in Egyptian architecture which receives its final explanation in the character of the pursuit, the grinding toil of the multitude who were constrained to devote themselves to the "most important industry of the country."

The multitude who labored in the arts and crafts were scarcely

better circumstanced, or, as a class, more highly esteemed than the farmers and herdsmen. The old monuments do not speak pleasantly of their lot. They tell of its irksome, of its long hours, of the light lit at night to prolong the day's toil, of its scanty rewards, its inglorious circumstances. We must be careful, however, in accepting any generalized statement about a large number of people; and particularly we must allow for the point of view of him who makes the statement. The Egyptian monuments and papyri do not picture the farmer's and craftsman's personal view of their own existence. In the hieroglyphics and old paintings it is through the eyes of the priest, the official and scribe that we see; and the aristocratic vision of the toiler's life is always drap and sombre. We know that in our own times the representation which the "upper classes" would give of the existence led by the multitude would be lacking somewhat in color and light. We may be sure that if we had a popular version of the farmer's and artisan's circumstances under the Pharaohs, we should feel in it the warmth of those elementary comforts and the stir of those common satisfactions which are not absent from existence and human intercourse even under the most adverse conditions. The native genius of the Egyptian laborer, too, was not dark or morose. The element of peasant mirth was strong in his composition, and he looks at us from the old monuments with a happy serenity, a soft, natural smile which brightens the gloomy portraiture of the ancient texts.

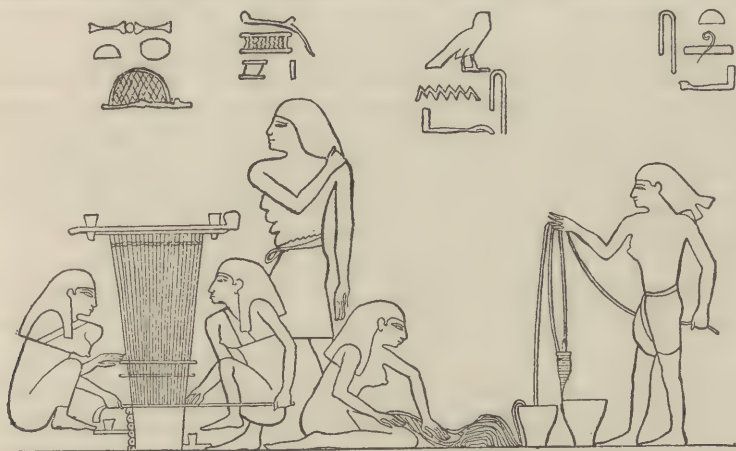
Apart from the fields and pastures, Egypt was a busy land. The potter's wheel was ever moving, for the country was rich in ceramic



Potters at work. (From an ancient drawing.)

clay. The abundant flax fields supplied a multitude of looms, the products of which were of high excellence. The papyrus reeds of the Delta marshes were worked into mats and sandals, and ropes and paper,

for which Egypt had a wide renown in antiquity. These reeds, moreover, were used in the manufacture even of boats. Tanning was extensively carried on. Despite the lack of native timber the carpen-



Weaving. (From an ancient drawing.)

ter was a busy and ingenious artisan. Metal-working was an important industry. The great skill and artistic touch of the ancient Egyptian goldsmith is even to this day a matter for high admiration. Of the building craft, we shall speak at length later on. Its wonderful triumphs in some respects have never been excelled; in others, even with modern machinery, they are unapproached. It is well, however, to refer here to the richness of the country in building stone. Egypt, as we have seen, is literally walled in with stone walls. Down south, near the first cataract, there is granite. It was from the quarries at Syene that the superb red granite came for the adornment of some of the great pyramids, for the huge obelisks and for the colossal statues of the Pharaohs. North of Syene the Nile cliffs are of sandstone, and

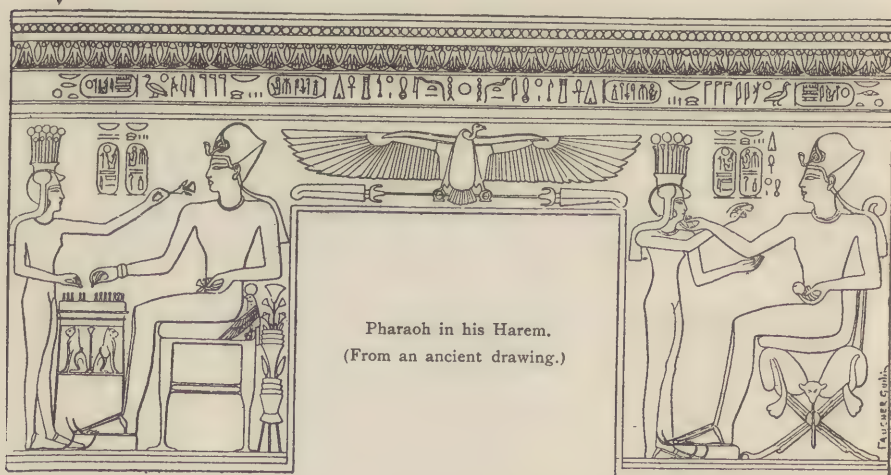


The transportation of stone. (From an ancient drawing.)

thither went the masons for the material for many of the temples and tombs. Near Silsilis this sandstone formation gives place to limestone, which extends along the remainder of the length of upper Egypt. Near Memphis, at Turah, on the east bank of the Nile, there were great limestone quarries, worked from the remotest time, which supplied the

stone for the pyramids and tombs in the vast necropolis in the desert on the other side of the river. Not far from Turah, and at a distance from the Nile to be measured by about four hours' journey were alabaster quarries. Between Coptos and the Red Sea in the Wadi Hammamât was obtained the precious dark-colored Bechen stone of which so many kingly statues and sarcophagi were made. Great expeditions were sent into the desert to Hammamât to bring back to Egypt a supply of this stone. Even as many as 8,000 men were dispatched on one occasion. Thus it is plain Egypt did not lack building stone, and if Nature in the Nile Valley hampered the carpenter by her niggardliness she provided the mason abundantly.

Searching further into the composition of Egyptian society we find above the craftsmen a great army of scribes and officials, a multitudinous priesthood and the nobles, and the King with his retinue of servants of all degrees, and the soldiery. At the head of the nation, of course, was the ruling Pharaoh, who was regarded not only as master of Egypt, but as a terrestrial god, the son of Ra, "the good god" as his subjects piously spoke of him, whose divinity was solemnly saluted and verbosely eulogized. Immediately surrounding him were the numerous royal household consisting of the imperial consort and her attendants, the King's harem, his scores of children (Ramses II. had two hundred sons and daughters), the court retinue of officials, workmen, domestics.



The royal palace and its necessary appendages constituted a town of no mean dimensions. It was the centre of the nation, the high seat of power and authority which was exerted throughout the land into every nook and corner by an elaborate system of officialism. In earlier days

Egypt was a feudal state. The Pharaoh was nominally and in some measure actually the owner of all the soil. Personally he possessed a large domain, farmed by "royal slaves," but the bulk of the land was held by feudal lords whose tenure of their fiefs was hereditary and conditioned only by the payment of regular tribute to the imperial treasury, by personal military service and by the duty of furnishing the monarch with a fixed number of armed men in time of war. In transmission by descent, the new ownership had to receive the sanction of the King. Thus grouped around the central power and attached to it by ties, the strength and closeness of which varied with the personal force, prestige and fortune of the ruling monarch, were a number of petty sovereigns whose sway in their own principalities was practically supreme. These vassals maintained courts in their several provinces, smaller copies of the royal establishment. There was a palace like the Pharaoh's, peopled with courtiers, officials, scribes, concubines, workmen and domestics. The lord farmed part of his domain himself and let the remainder of it to his subjects, who paid him in services and in kind. He kept an army and navy, and though not a god he was high-priest and law-giver. Such in brief were the conditions which prevailed in the earlier days of Egyptian history. There is no fixity, however, in human affairs, and in Egypt as everywhere else there were not only the slow changes brought about almost insensibly by daily events, but there were revolutionary alterations produced by conquest and by violent internal ferment. As we shall show further on, the feudal state entirely disappeared in Egypt in the middle of the national career, and was replaced by the rule of the military cast and the priestly cast, the latter predominating.

Beneath the Pharaoh, the petty rulers, feudal, military or priestly, the multitudinous minor officials charged with the inferior details of administration and the collection of taxes, came the mass of the people, the vast commonalty of craftsmen, farmers, peasants and serfs, docile, limited and ignorant, to whom existence was very much an affair of the commoner instincts. We have already sketched their pursuits sufficiently for our present purpose, and now the reader perhaps may be able to make for himself some picture of the national life of ancient Egypt, and it is this picture the foregoing descriptions have been intended to create—in the town, the palace of the noble, the houses of the rich, the army of functionaries, the temple with its priesthood, the military, the several classes of workmen, each class united in a corporation under a master-workman (for in Egypt everybody owned some master) and grouped in certain quarters of the city; the small crowded habitations of the poor, the open space where the weekly markets were held and artisans and peasantry from the country around congre-



AN EGYPTIAN VILLAGE.

gated to barter and haggle over their wares and produce. Outside the city, the rural population lived, huddled in villages of mud huts, not in farmhouses scattered along country lanes; for the river was the great highway of travel, it led everywhere, and the canals that intersected the fields made roadways and vehicular traffic almost impossible.

There is still to be added to our picture of Egyptian civilization an essential element which as yet has scarcely been hinted. The central fact in every civilization is its religion. Despite errors, absurdities and superstitions, with which the intellect may not sympathize, it is religion that embodies the prevalent moral ideas of the time, we may say presses them into action, thus contributing immensely in the formation of the type of civilization produced by a people. It shapes their ideals and furnishes them with that ultimate sanction for conduct to which all their activities constantly tend to conform. Moreover, all the higher moods of man if not formally religious have strong affinities for religion, and as in Art there is inevitably an element of spiritual elation (Art is, indeed, a notation of the higher moods), it is at all times closely associated with religion. Architecture, particularly, has attained to its highest reach upon the consecrated ground of each generation, and nowhere more closely than in Egypt has architecture been allied with

religion. It is impossible to understand the one without some knowledge of the other.

It is not necessary here to undertake an elaborate account of the very difficult subject of Egyptian mythology. The facts we have to keep in mind are few. The Egyptian worshiped a great number of gods, "a rabble of gods," it has been said that "severally represented a function, a moment in the life of man or of the universe." In the Egyptian pantheon were sun-gods, star-gods, gods identified with certain animals, reptiles, and plants. It is very probable that in the times preceding the historical period Egypt was a land of petty states, and that each little principality was not only the seat of a separate government, but of many other local differences, of which, no doubt, those of a religious character were the most important. Each district had its specially favored divinity or divinities. In one it was Ra, in another Ptah, in another Amon, in another Hathor, in another Osiris, in another Set, or Isis, or Thot, as the case may be, and it is easy to understand how in the political unification of the country and in the parts which the nomes or principalities played in subsequent national history the prestige of the several gods increased or diminished with the fortunes of their worshippers. The influence of the local god was extended with each enlargement of the sphere of the political sway of his town or district. In this way there arose *great-gods*, distinct from the small, local, inferior divinities. Even among the great-gods themselves ranks and orders were evolved, the lines of which were pretty definitely established before the beginning of the historical period. Intercourse and the growth of national sentiment not only tended to produce a national pantheon, a grouping of the "rabble of gods" into a related family, but several divinities were merged into one by a process of identification, or were amalgamated into types, so that many gods came to be regarded as merely different manifestations of the same divine personality. The evolution of Egyptian religion progressed towards the conception of one god, but it never attained to the abolition of polytheism. There were always the greater gods and the lesser, gods purely local and gods of national repute, and with the cult of each were associated legends and tales, wonderful as the stories of mythology are wont to be.

And to all these gods clung so much of human nature that they appear to us as very little more than magnified men and women. A dwelling was needed for the god, so temples were built for him; he needed meat and drink, consequently the table of offerings were laden with sacrificial food; he had a "mystical harem" of women of high rank who sang before him, and it was the duty of the priest even to dress and rouge the god (represented by, if not loosely identified with,

the image of the divinity). There were, of course, days of festival and feast in his honor when the sacred statue, inclosed in a shrine so that the profane might not see it, was carried in procèssion among the people. The priests alone officiated in the worship. The populace were pious spectators of the ceremonial, at least they were no more than such during the greater part of the Egyptian history.

In the very early days there was a lay priesthood as well as the strictly sacerdotal class which officiated in the temples, but in the course of time the religious administration passed exclusively into the control of the ecclesiastics, who during the New Empire became the dominant force in national affairs. This was inevitable almost, their

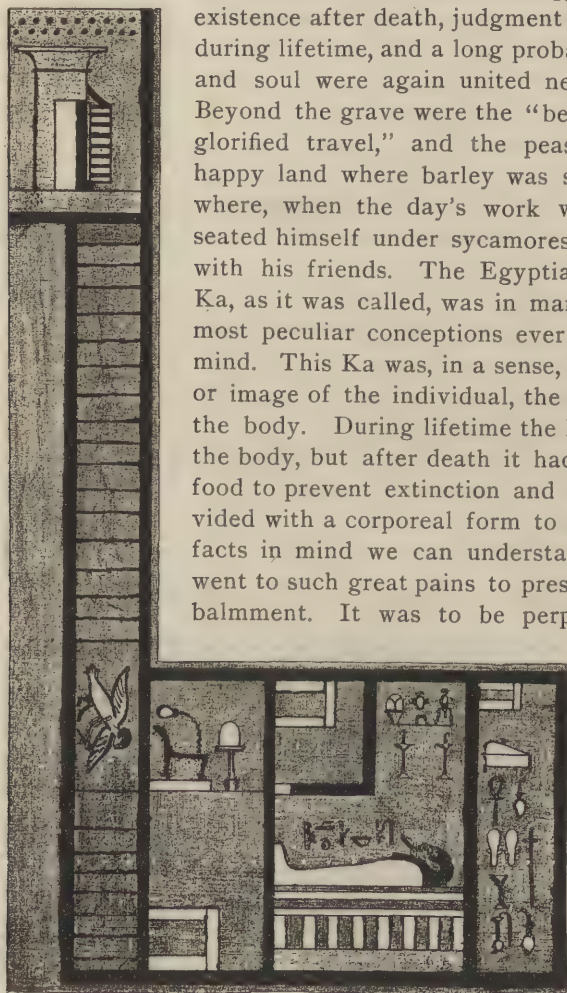


An Egyptian and his Ka. (From an ancient drawing.)

riches were so enormous, created by gifts of the pious and the generosity of the Kings. For instance, in thirty-one years Ramses III. bestowed upon the temples of Egypt 169 towns, 113,433 slaves, 1,071,780 plots of ground, 514,968 head of cattle, 178 ships, 680,714 geese, 5,740,352 sacks of corn, 6,744,428 loaves of bread, \$1,000,000 worth of the precious metals (reckoned at the present greatly diminished valuation of gold and silver), 1,093,803 valuable stones, not to speak of enormous gifts of wine, beer, honey, fish, fruits, incense, and the like.

But the foregoing tells us nothing of the nature of the faith of the people, of the personal interest of the Egyptian in the religion he pro-

fessed. The gods were something more to him than the centres of an imposing ceremonial. They dispensed to the faithful good fortune, health and abundance, they were the protectors of the state or the district or the town, as the case might be, and it was to gain the favor of his god that the pious Egyptian brought to the priests the first fruits of the harvest. Besides, the Egyptian believed in an existence after death, judgment for offences committed during lifetime, and a long probation, after which body and soul were again united never to be dissociated. Beyond the grave were the "beautiful ways which the glorified travel," and the peasantry dreamed of a happy land where barley was seven cubits high and where, when the day's work was done, the laborer seated himself under sycamores and played draughts with his friends. The Egyptian idea of the soul or Ka, as it was called, was in many respects one of the most peculiar conceptions ever formed by the human mind. This Ka was, in a sense, the spiritual "double" or image of the individual, the vital spirit residing in the body. During lifetime the Ka was nourished with the body, but after death it had to be sustained with food to prevent extinction and at the same time provided with a corporeal form to abide in. With these facts in mind we can understand why the Egyptian went to such great pains to preserve the body by embalmment. It was to be perpetuated for the final



Representation of Ka descending a tomb shaft to join the mummy.

reunion with the soul, and in order that the Ka might take possession of it whenever it so pleased. The extinction of the Ka meant the annihilation of the individual. Herein we find the explanation of the great pyramids and the elaborate methods of sepulture devised by the Egyptians.

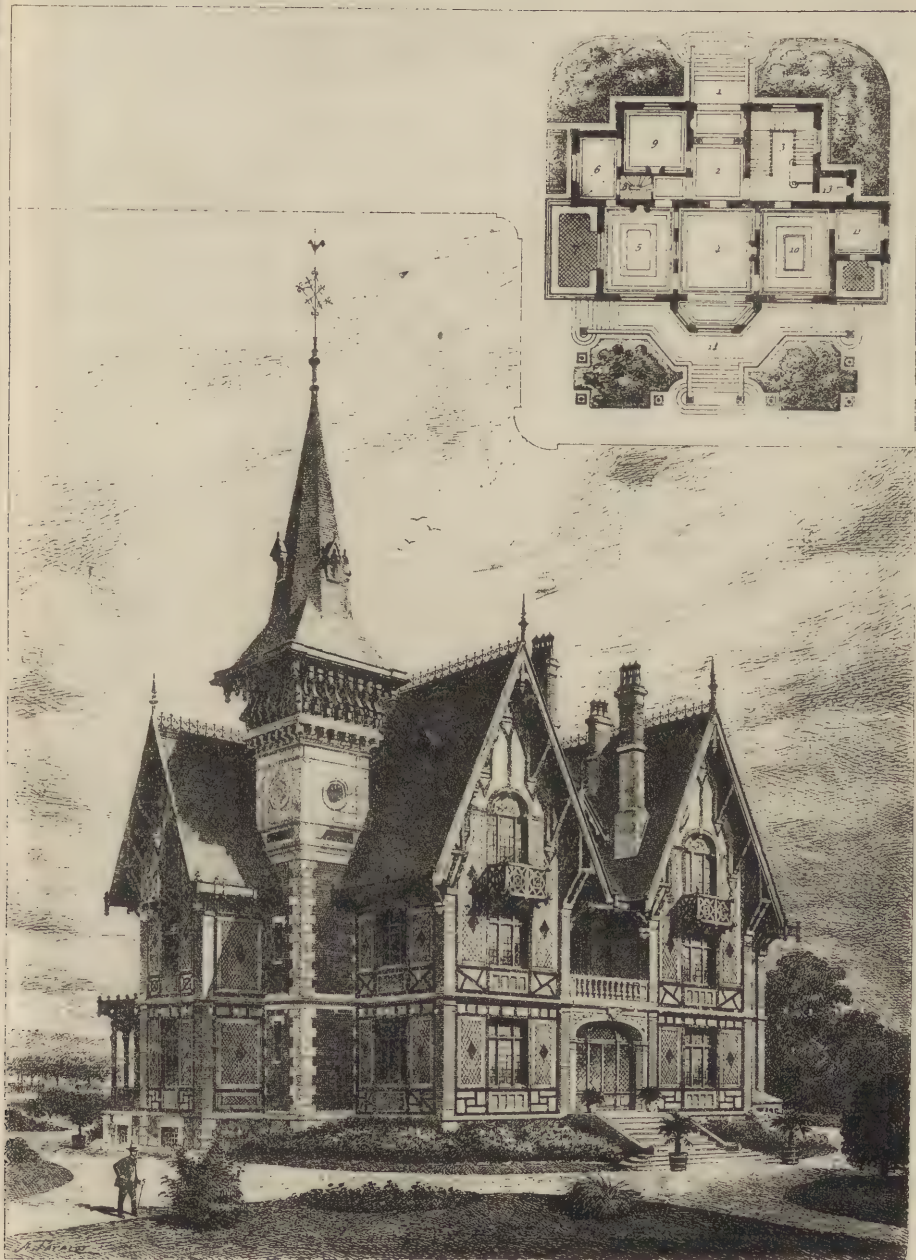
Existence did not cease with death. The wants of the deceased continued in the tomb, hence it was the highest duty of the living to provide the mummy with food and extensive mortuary furniture.

Usually we find associated with beliefs like the foregoing a strange confusion between actual things and the representations of them; that is, a picture or image of an object is regarded as in some measure identical with the object itself. The Egyptians held this notion. Consequently it was natural for them in providing for the requirements and comforts of the dead, not only to supply the Ka with actual food and drink and so forth, but with more durable pictures of offerings and with statues of the deceased. The former constituted a kind of magical or spiritual subsistence, and the latter in case of accident to the mummy served as a sufficient embodiment for the Ka. Hence we find the Egyptian tomb decorated with pictures of a profusion of loaves, meat, fruit, jars of wine, and furnished with a number of statues. Even inscriptions enumerating these supplies were regarded as sufficient substitutes, and on the tombs petitions addressed to the pious passer-by were placed, supplicating him to exclaim on behalf of the dead, "grant thousands of loaves, thousands of jars of wine, thousands of jars of beer, thousands of beeves, thousands of geese," for the ghostly sustenance of the departed Ka.

Harry W. Desmond.

In the chapter to follow will be shown the relation of the foregoing data to Egyptian architecture and its history.





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The translation into English of valuable books on art is continually prevented by the costly character of the books. To take an extreme case: Here is, now nearly complete, the magnificent work by Geymueller on the "Renaissance Architecture of Tuscany." It will cost, when complete, two thousand marks; and what American publisher would dare to undertake an edition of that, with English text? And yet, to note its extreme importance; to observe the list of biographies of great artists that it will contain, all of them treated with fullness, all up to date, all embodying the result of the latest research; to see that here will be what exists nowhere else, the life and works, with abundant illustrations, of Brunellesco, Desiderio, Rossellino, Baccio d'Agnolo, Donatello, Verrocchio, Alberti, Mino da Fiesole and their compeers, thirty-eight of them in all; to examine the noble photographic plates and the trustworthy engraved plans, sections and details, to turn over, in short, any one of the sixteen double numbers that have appeared so far is to long as one without hope for the introduction of Americans to this monumental book.

Well, not even if all in English could this book be bought by many private persons. But in scores of towns there are societies who could buy it, and who would make up their minds to the pull if only the text were in English. In every great city there will be three or four copies bought; there might be many more, if only the text were in English.

So that, as the *desideratum*, or an edition with English text, seems wholly unattainable, the thing to hope for and to strive for would seem to be a translation of the text and its publication by itself. It would make about 1,600 octavo pages, or three volumes like those of Viollet-le-Duc's

Dictionnaire, or rather more than Fergusson's "Ancient and Mediæval Architecture." In America and England an edition of such a book might well be sold, for it would have its great and peculiar value apart from the plates and without them, while by means of it every copy of the original German work would become for us what it is for Germans. In other words, the library which would buy the folios and pay \$500 for them, would also pay \$15 for the text in English; and that, by the way, in a far handier form than the huge original, with its pages of 17½ by 24 inches. It must be premised and agreed upon that great care be taken with references alike to the large plates and to the numerous illustrations in the text; that is of course. And the translation must be a worthy one; absolutely complete, very close to the original, and written in as elegant English as the destinies allow.

There are other books of this grandiose sort. Bode's work on the "Sculpture of the Renaissance" is to consist of about seventy parts at twenty marks each. The work on "Greek and Roman Portrait Art," by Brunn, Arndt and Bruckman, is to be of eighty parts, at the same price per part. Brunn's "Monuments of Greek and Roman Sculpture," now complete, is of the same size and cost. And these books are all of general interest; not one of them is a monograph or devoted to the excavations upon one site or within one State, or to the buildings of one town, or to the sculpture of one artist or of one collection. Each one of these books is of primary importance, and ought to be made accessible to every student.

Let us now be reasonable and modest in our requirements and speak of smaller matters. Here is Salzenberg's book on the buildings of Constan-

tinople, to which attention has been called by the valuable book of Messrs. Lethaby and Swainson, which we review. Salzenberg's folio is not very large, and his quarto of text is thin. No one need pay more than fifteen or twenty dollars for the original, and an English translation of the text could be included in a two-dollar octavo. Choisy's "Art of Building Among the Byzantines" is still smaller and still less costly. Byzantine architecture is exciting some interest just now, one is glad to see. Well, no one can be said to know much about it until he has studied these two books. And it must be said plainly that looking at the plates and puzzling out a little of the German or French text which describes the plates is *not* studying the book or the subject, whatever the sanguine may suppose. Turn the question around. Ask yourself how much a Frenchman who cannot read English any more easily and naturally than most of us read French is likely to get from one of the few books of critical value which we have in the English library of art. Is it not evident that he will misread and misjudge fully as often as he will receive the right impression from the text?

Therefore, we ask for translation and publication in an inexpensive form of the text of art-books in German, French and Italian; perhaps also in Spanish; perhaps also in Russian; of periodicals if not books in Greek; of now and then a monograph in the language of one of those small States whose citizens publish their important scientific and scholarly work in French—Denmark, Sweden or the Netherlands. A foundation like the Avery Architectural Library ought to have a fund for this special purpose, and little by little its treasures should be made accessible to all its beneficiaries by English translations of the right sort.

The Church of Sancta Sophia, Constantinople.
A Study of Byzantine Building. By W. R. Lethaby and Harold Swainson. London and New York: Macmillan & Co. 8vo., pp. viii., 307.

This is a beautiful book. It is printed on laid paper with the "Alliance" water mark, of pleasant surface and left with rough edges. The printing is good English work. The illustrations, seventy-five in number, are unusually attractive; all from original drawings, all having a certain resemblance to one another in their system of black and white, and all pleasantly quaint and archaic looking, as if from a fifteenth century book. Moreover, a slight glance at the book is enough to show that it is full of most valuable matter. It

is not well arranged however. One looks in vain for a list of illustrations and the text mentions "fig. 5" or "fig. 26" without any mention of where the said figure may be, whether above or below. The distribution of the material of the text is unsystematic; made so, perhaps inevitably, by the succession of long transcripts, from Procopius, Agathias, Eragrius, and especially Paul the Silentiary, which are succeeded by a long inquiry into the original and later arrangements and furnishing of the church, this by an account of the reparations of 1847, and this finally by an analysis of the construction and decorative character of the church, partly original and partly founded on the books of Salzenberg, Choisy and Labarte. The authors have gone to the building with open eyes and a fine reverential feeling for the noblest church of Christendom, they have compared the most important ancient writers and have guided themselves by the most trustworthy modern authorities, but their book is a bringing together of valuable material rather than a well-arranged history or a criticism. The index goes far to complete the work; and yet the index itself in giving after the term "Dome of S. Sophia" thirteen page-numbers without further explanation, eight such numbers to the word "Capitals" and as many to the word "Vaults" cannot be thought to help the student much. Every student knows the impatient despair with which, after looking up four or five of these pages in a vain attempt to find a special thing, he drops the subject. This is a good book to read—one may even read one chapter and skip another; but books of this class are far more useful for reference than for perusal, and as a book of reference this is not a complete success.

"Sancta Sophia is the most interesting building on the world's surface. Like Karnak in Egypt, or the Athenian Parthenon, it is one of the four great pinnacles of architecture, but unlike them this is no ruin nor does it belong to a past world of constructive ideas, although it precedes by seven hundred years the fourth culmination of the building art in Chartres, Amiens, or Bourges, and thus must ever stand as the supreme monument of the Christian cycle." These words quoted from the preface show the authors' point of view, assuredly the right point of view to take in discussing as architectural critics any great building of the past. The book is full of a wise and sympathetic appreciation of what is great in architecture and of what is instructive in liturgical and decorative archæology and will repay all the study that may be given to it.

Rational Building. Being a Translation of the article "Construction," in the Dictionnaire Raisonné de l'Architecture Française of M. Eugène-Emmanuel Viollet-le-Duc. By George Martin Huss. Macmillan. 8vo., pp. vii., 367, \$3.00.

The publication of translations of scientific and critical works is only commendable when the translation is literal and complete. The English reader who cannot read a given foreign language has a right to complain if he is offered a translation partial, or incomplete, of a book in that language which he desires to use. Such a translation goes far to prevent the issue of a complete one. And as for the partial translation itself, the student is within his rights when he asserts that the translator has no business to do his selecting, his choosing—that is to say, the first and most important part of his studying for him. This is the more especially to be insisted upon because it is notorious that most translations are made by wholly incompetent persons. A young woman who can speak French fluently and who has read a number of French books would be a person above rather than below the average of translators, and yet such a person would probably be ignorant of the exact meaning of many modes of expression and turns of phrase and would certainly be ignorant of the exact force of the technical terms employed.

The above preamble is to explain why the book

under consideration seems to us important, although the translation of only one article selected from a large work of reference. The translation is extremely literal, sentence by sentence, phrase by phrase. Every one of the 156 illustrations of the original is given in its proper place, reduced in size, it is true, and less pleasing, but as useful as the French originals. As with the illustrations so with the text. It is less pleasant to read than the original, because of a certain stiffness which comes of the attempt to be severely exact, but the whole work is here for whomsoever would study it.

As to the importance of the work itself it must be noted that of the nine volumes of M. Viollet-le-Duc's text, half of a volume is devoted to this one article, *Construction*, and much more than half a volume to the one article, *Architecture*; that these two articles embody the author's theories and convictions as to ancient and mediæval building as a science and as an art; and that this discussion covers all the art of architecture previous to the day of steel and iron construction as made possible by modern organized industry. All our styles of architecture are based upon the systems of building which are analyzed and criticised in these two articles, *Architecture* and *Construction*. One of the two is given in this book in intelligible English, and now we shall hope for the other.





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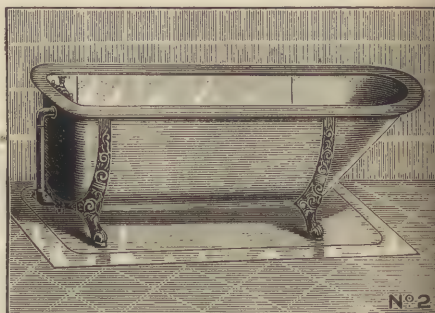


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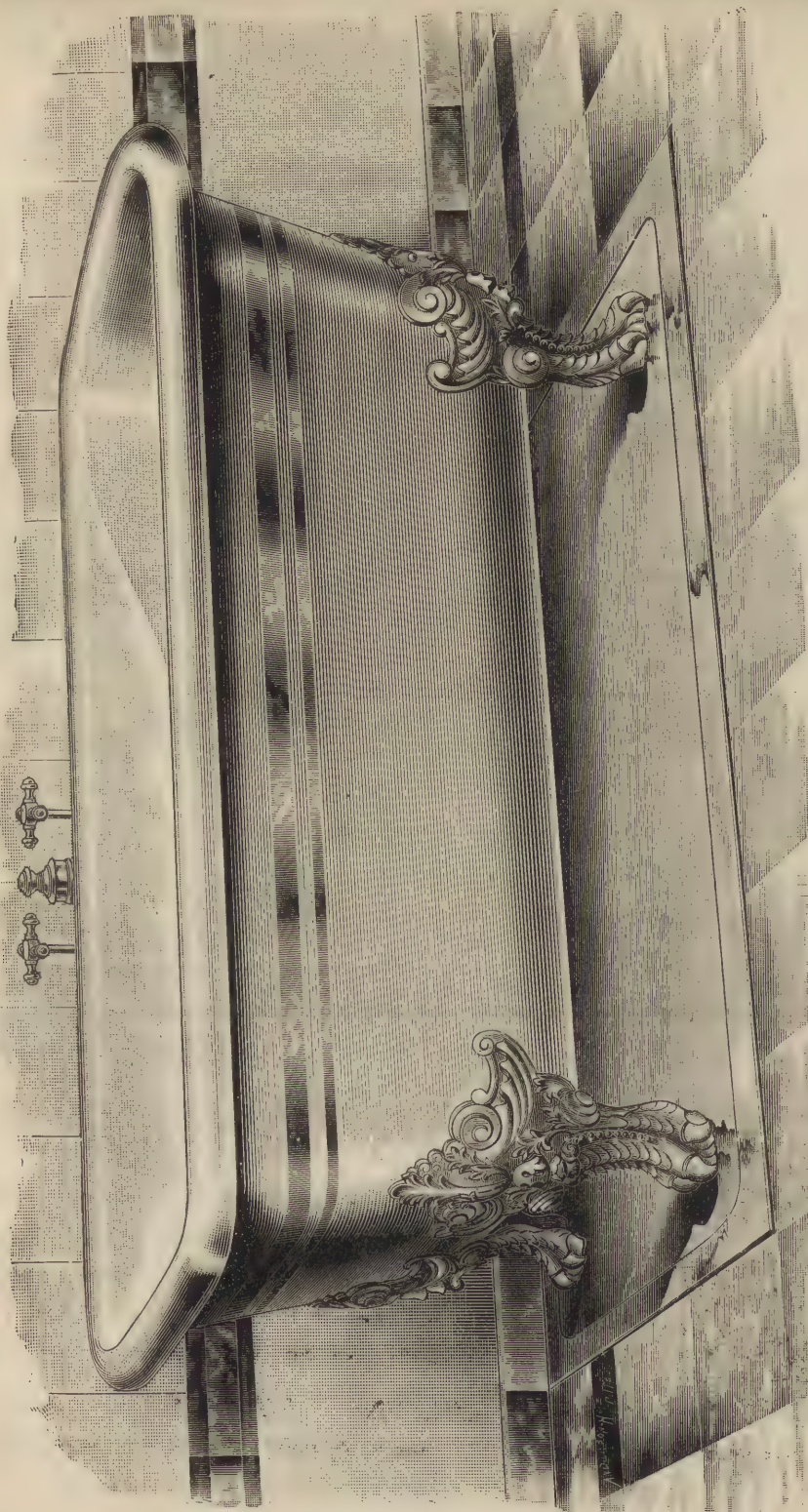
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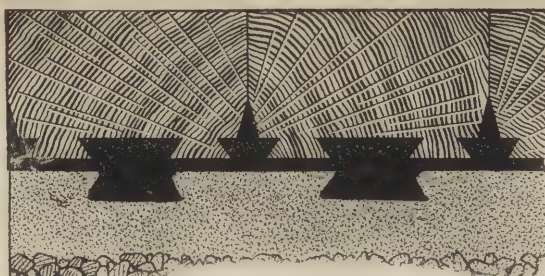
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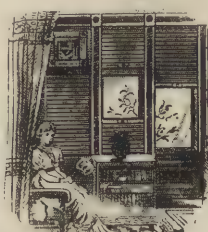


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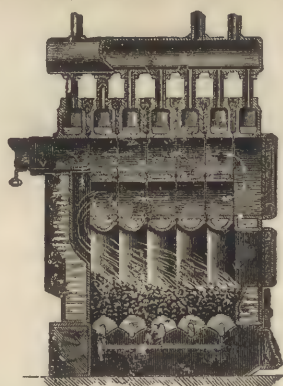
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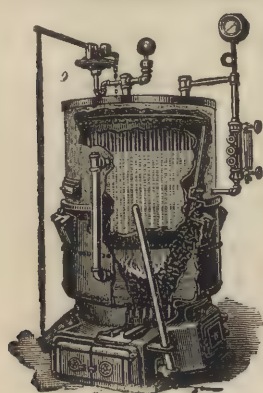
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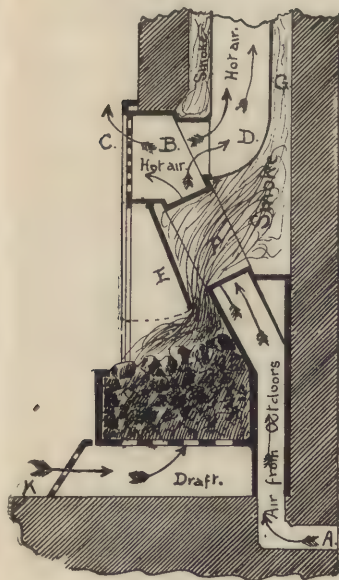
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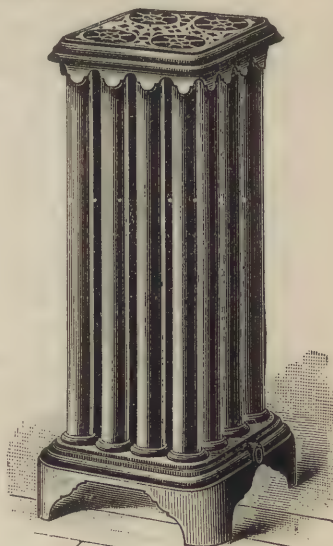


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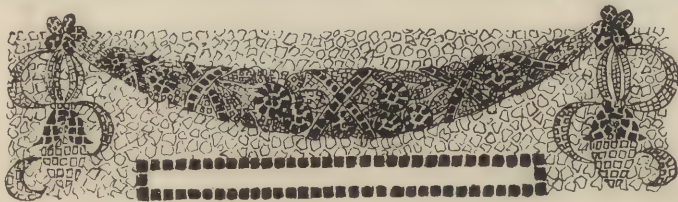
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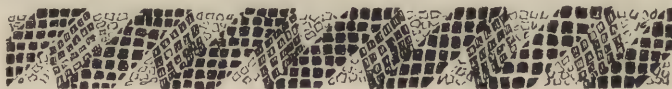
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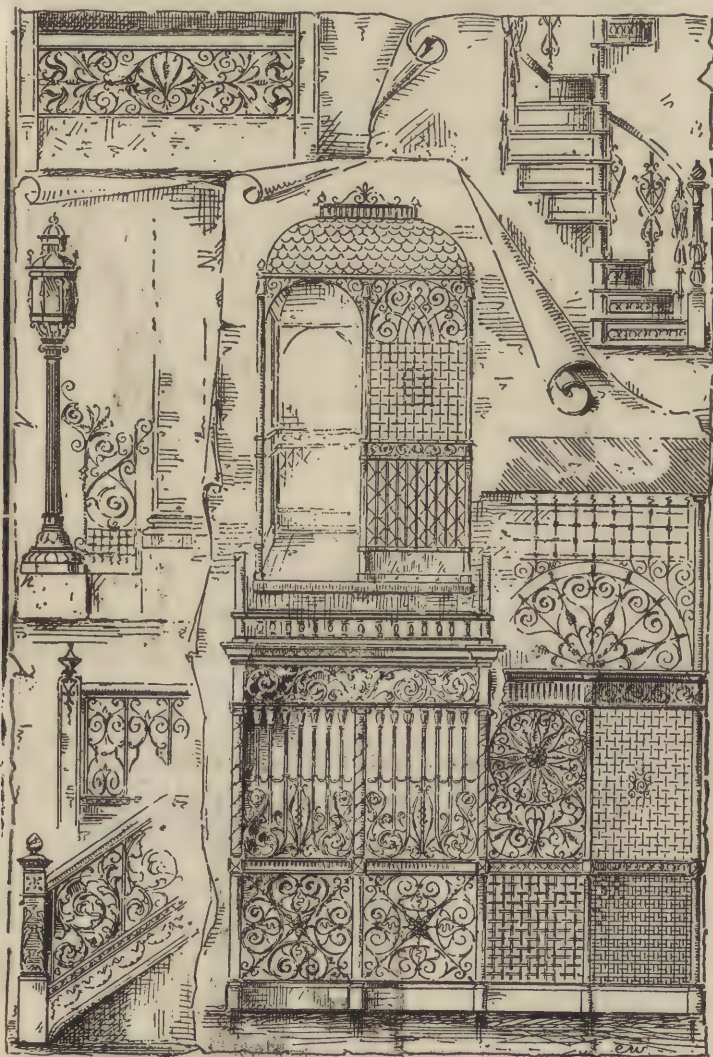
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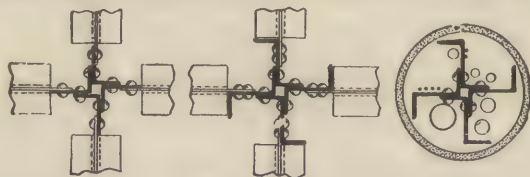


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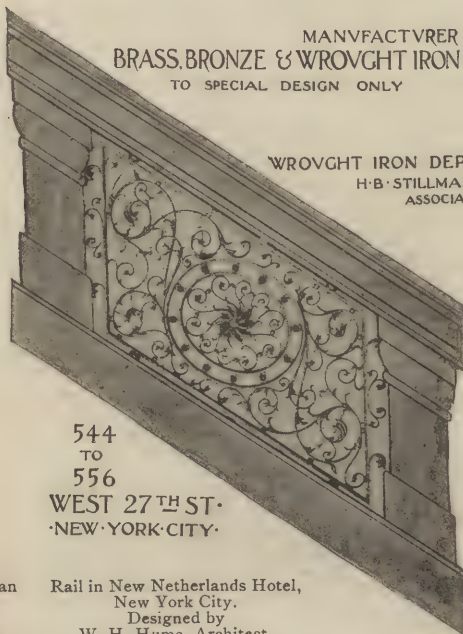
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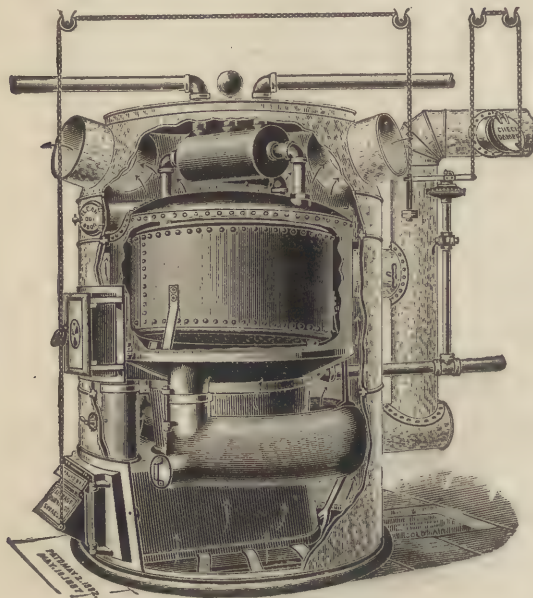
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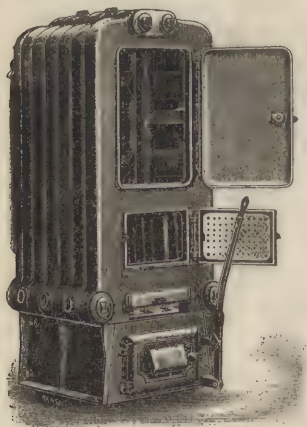
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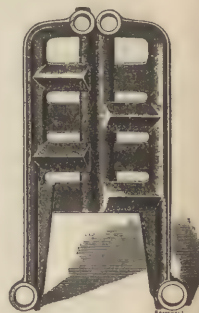
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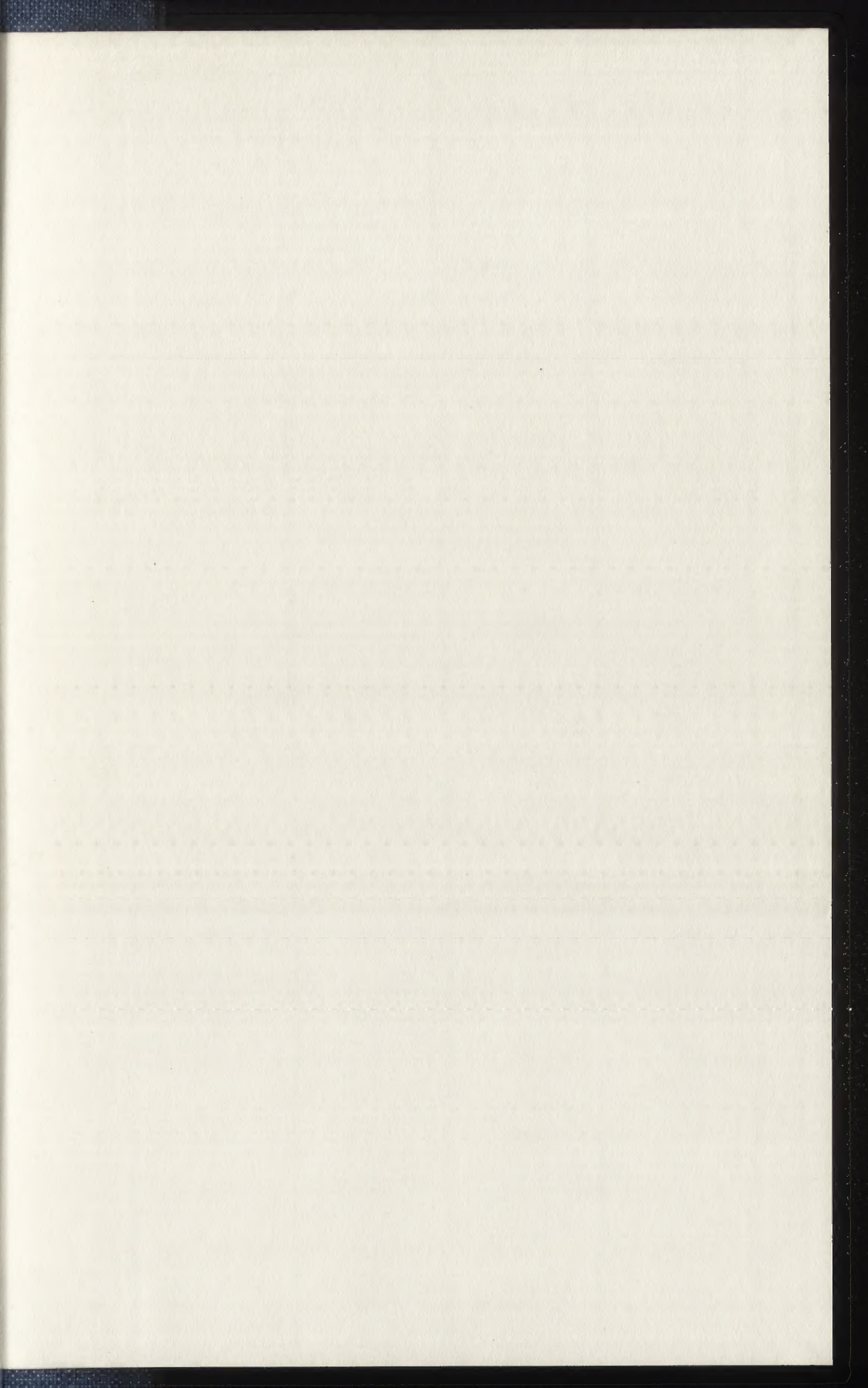
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